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Editorial

CHICAGO THE MEDICAL CENTER OF THE WORLD

Chicago Medical Society has the opportunity of a lifetime at hand. If taken by the proverbial forelock the city can be made the medical center of the world.

Work qualifying the city and its environs for this distinction is performed hourly all about us. Neglect to let others know of our capacities and performances will result in Chicago's slipping into a mere sub-station for outlying physicians to come for post graduate labors. Instead of being the medical center of the world, Chicago will soon cease to be even a rival for this supremacy in the United States, unless some action is taken.

The Chicago Medical Society should assume the responsibility of cooperation and organization between the profession, the schools and hospitals and affiliated institutions to the end that the choate unit will be a forceful lever to bring about the "rendering unto Caesar of the things that are Caesar's."

Chicago should be the logical city for visiting physicians to come for supplemental study. The population is large. The city is beautiful.

There are four large medical schools with a wonderfully competent and efficient teaching staff. Here are all the ingredients. What is needed is the mortar and pestle to mix them.

Is it not possible that through the offices of our Society we can receive notices of all clinics, and of all work that is being done in the colleges, in the hospitals and private clinics, and bulletin same, not only to visiting physicians but to our own members? Why should not the Chicago Medical Society advertise in the American Medical Association Journal that visiting physicians are welcome from any part of the country; that the Chicago Medical Society will assist them in post graduate work?

Cooperation from the institutions and the

individuals, if organized and distributed properly, will go far towards placing Chicago at the head as a teaching center.

Another progressive step would be the organization by the Chicago Medical Society of the professional labor done in Chicago so that our own members would have opened to them diagnostic and treatment clinics as well as especial clinics. In this way our own membership will make themselves more efficient physicians and surgeons.

This when analyzed would appear to be indubitably the inevitable and only way in which to overcome the propaganda of various cults and isms, and the so-called practitioners of bloodless surgery and medicine.

Along with post graduated work there would run a bi-monthly diagnostic clinic held on the south, the west and the north sides of Chicago under the auspices of the Chicago Medical Society. Our members would gain greatly therefrom.

These views are expressed for the purpose of creating discussion with the possibility in view that good may arise therefrom. Will those who are interested in the idea please place themselves on record by comment either favorable or otherwise?

It rests with Chicago to put this great undertaking where it belongs on a plane of established success that will make Chicago a medical center of admiration for the whole world.

PRE-SCHOOL CHILD EXAMINATION

The accompanying insert shows the pre-school child examination card which will be supplied free to every member of the Illinois State Medical Society upon application to the Lay Education Committee, 58 East Washington Street, Chicago.

These cards have been purposely reduced to their simplest terms and have been printed for the purpose of a state-wide examination by the State Department of Health.

According to the plan of the campaign, every club woman of the 70,000 members of the Illinois Federation of Women's Clubs is urged to accept the personal responsibility of one child—her own, her neighbor's, or her employe's—to see to it that this child is given a complete medical and dental examination by the family physician and dentist and that defects indicated are followed up and removed.

The emphasis in the campaign is on its educational aspects. The important thing is to get this child, of the age medical men agree is most neglected, to the family physician. The card is then to be forwarded for statistical findings to the Lay Education Committee, though the physician, of course, will make any copies necessary for his own history record, and the mother is to be given a statement on the physician's prescription blank to this effect:

"Your child is normal except for.....
I recommend ....."

After statistics have been gathered, the original card will be returned to the mother through her club organization.

This campaign can be made a great step forward in keeping the whole family in touch with the family physician and in teaching the idea of the periodical health examination for the adult, also. It is not to be confused with a charity clinic. As each club woman reports that she has discharged her personal responsibility, she reports the names and addresses of children whom she believes should have this examination on a charity basis because they are already a public charge for some other of the necessities of life—food, clothing, fuel, shelter, etc.

All arrangements for such charity work will be handled under the direction and by the approval of the county medical society, from which the reports come, and will not be attempted until the educational phase of the work is completed.

From reports through various parts of the state, it is believed that much interest will be shown in this work and much good accomplished.

It will be of interest to the Illinois State Medical Society to know that a physician from southern Illinois has offered a prize of $500 in cash, to be awarded to that club of the Federation which, in the judgment of a committee to be appointed by the President of the Federation and the President of the State Medical Society, has done the most efficient work for the pre-school child examination in proportion to its membership.

The award will be made in the name of the Illinois State Medical Society and the name of the physician will not be used.

DEPARTMENT STORE PRACTICE OF MEDICINE

PROUD OF THE FACT THAT THEY CAN SUCCESSFULLY COMPETE WITH PRIVATE DOCTORS

Three Years of the Cornell Pay Clinic

California and Western Medicine, October 1925 issue, takes to task the report of the Cornell Pay Clinic covering a period of three years. The editorial is so timely and complete that we reproduce it. We read:

The Cornell Pay Clinic, says its recent report, "has proved a successful demonstration of the possibility of providing good medical service on a self-supporting basis for persons of moderate means. Since these persons constitute the majority of the population, the Cornell Clinic announces itself as 'a demonstration of considerable public importance.'"

The most amazing feature of the expensive report gotten out by these promoters of department-store practice of medicine is that they are apparently proud of the fact that they can successfully compete with private doctors with the "majority of the population."

Their report announces with apparent gusto that, whereas other pay clinics, some of which are enumerated, do serve some poor people free, the Cornell Clinic absolutely refuses charity because it was feared the Clinic would be "swamped by non-paying patients" unless service was "limited to those who could pay its fees." *In other words, this clinic is in the practice of medicine for fees precisely as are private physicians.* They are so cold-blooded about it that they refuse any help to the poor "except in emergencies" and for purposes of "medical education and research." This, of course, gives them a tremendous advantage over the private physician who considers it his duty — and privilege — to render a large amount of free service. It even gives this corporation form of medicine advantages over the Mayo Clinic, the clinic in connection with the Ford Hospital and others they mention, in that all of these do some free work. Cornell claims a large volume of business, with an average of 18,000 new patients a year. The report shows 118,711 visits during 1922, 110,235 during 1923, and 114,705 for 1924. These, according to the report, represent about 90 per cent of those who apply for service; *the other 10 per cent are refused because of inability to pay the fees.* There is another 10 per cent who, although of doubtful financial standing, are accepted.

A Promising Business Venture — Although only in its fourth year of business, this clinic has grown financially from a deficit of $46,000 in 1921 to a self-sustaining basis in 1924, and the indications are for a substantial profit for 1925, unless some of the usual business methods of preventing such showings of profits are utilized. This is an encouraging showing, from a commercial standpoint. It is said to have taken Mr. Gary longer than this to make United States Steel a paying proposition.

Fees—The report gives the average fees paid by patients as $2.24 a visit. As an *average,* such fees ought to make the practice of medicine very profitable, particularly when it is remembered that they render no free service. Less than 20 per cent of the doctors of California—and we suspect of New York as well—*average* as much as $2.24 a visit in the practice of their profession. But, of course, they all do free work, and most of them a large amount of it, which naturally pulls *their* average down.

Substituting salaries for fees to physicians gives corporation practice of medicine another advantage in their competition with the private fee basis of pay usually employed by the physician who practices as an individual. The Cornell Clinic report shows that they paid $90,770 as medical salaries last year. When this is considered in connection with the 114,705 patient visits, we see that they paid their doctors the bargain-counter figure of seventy-eight and a fraction cents a patient visit. Mind you, these were no "let me see your tongue" visits. Some 10 per cent. of them were first visits, with a "thorough physical examination" which required "nearly three-quarters of an hour of the doctor's time," while the others were revisits requiring "ten or fifteen minutes" of the doctor's time. The report shows that the Clinic paid "non-medical salaries" equivalent to well over a dollar per patient visit. Compare that with the 78-cent doctor's fee, and draw your own conclusions. The report's apology for the "flat fee," like all similar apologies, whether emanating from a Detroit

hospital, a labor union, or a government bureau, makes illuminating reading.

The various clinic "chiefs" are paid a "flat salary" of $1,500 a year, which, according to the report, is for from 268 to 360 hours of their time—at most, $5 per hour. Other doctor employees are divided into two groups—one class is paid $2 an hour, and the other $2.50 an hour. They work in clinic "sessions" of two and one-half hours each, and if the doctor finishes his work in two hours he is permitted to take the other thirty minutes off, presumably on full pay. The Clinic attempts to provide these doctors working for wages all the clerical and technical help they can use, but, says the report, "where the physician is supposed to be giving his time in hospital or clinic without remuneration . . . he can be clerk as well as doctor," because this combination "saves the institution money."

In answering the question of who are their patients, the roport says the average wage of the patients is $1,800 a year, and that the wage-earners average "somewhat" more than one per family. The report quotes the figures of the Housing Commission of New York, to the effect that two-thirds of the families of the city have incomes under $2,500 per year. Therefore, says the report, *"Potential Cornell Clinic patients represent a majority of the population of the city."* If this dream should come true before the inevitable awakening occurs, there would be left to the some 15,000 doctors—many of them Cornell graduates—a clientele of a minority of the people of the city, and *all* of the poor would be in this minority because the Cornell Clinic refuses to serve them, so the personal doctor must do so, as he always has done. Interesting, isn't it? That interest will be intensified by the well-bolstered statement of the Clinic that many of their patients "have had previous medical care without satisfactory results before coming to Cornell." We wonder if the Cornell service is so superior that their shoe might not fit the other foot with equal certainty. The report certainly indicates strongly enough what the Cornell Clinic promoters think of themselves, as compared with their own graduates with whom they are competing, when they say in effect that the great popularity of the Clinic is due to "previous unsatisfactory experiences" of their patients and to the "prominence" of the Clinic doctors, who are "leading members of the medical profession." Considerable space in the report under review is occupied in explaining, by invidious comparisons, how and why the services of the Cornell Clinic "indicate a much higher level of medical efficiency" than do similar figures from other clinics. Some ingenious philosophy and some queer figures are used to support this conclusion, which some readers will extend to a logical conclusion of interesting if not entertaining portent.

To make the claim that because many patients are added to the Clinic's happy clientele because of dissatisfaction with their former doctors is indicative of the Clinic's superior service, is likely to have another side. Surely, there must be some patients—and we suspect there are many—who also became dissatisfied with the Clinic and took their patronage to a clinic competitor. Of course, the ethical doctor works at a disadvantage in this phase of competition because his idea of service does not extend to follow-up letters and personal solicitation to return by paid agents or solicitors of any kind. His contractural relations with his patient are purely personal and wholly voluntary at every stage of the contract.

The authors of this ingenious report appear to get considerable satisfaction out of invidious comparisons of the costs of service to the patient between what they are pleased to term the "commercial rates" of private doctors and their department-store prices. This part of the report reads much like advertisements published for the purpose of increasing trade, and closes with this: "From the financial standpoint, there is no question that the Cornell Clinic is offering a grade of medical service which would be far more expensive to its patients in private offices" . . . and "the family incomes of the Cornell patients are typical of the majority of the families of New York City."

Careful reading of this report of the Cornell Clinic, only a few outstanding features of which have been noted here, leaves the thoughtful reader with a variety of feelings. One is in wonder as to how many of the fifty odd thousand patients who visited the Clinic needed hospital care, including surgical work; what hospitals and what doctors were they sent to? Why? What were the expenses and who paid the bills?

The chances for referred work from a large clinic that does no free work and claims the majority of citizens of New York as its legitimate customers ought to be exceedingly great.

The House of Delegates of the American Medical Association has twice disapproved as unnecessary and inadvisable, movements which appear to offer only part of what this clinic offers under similar principles and tending in the same obvious direction.

Are department-store methods and corporation practice of medicine to replace the personal service of the doctor to the patient who chooses him? We wonder. If the policies and practices of the Cornell Clinic are sound, then many other varieties of big business medicine are sound and in the best interests of the public health. None of these activities can be considered to be local. Attempts to start Cornell Clinics have already been seen in California and presumably elsewhere. If the Cornell Clinic is the best method of caring for thousands of pay patients of New York City annually, then the principle should be extended to all classes of people throughout the country. If it is unsound, unwholesome and unwise, then physicians should say so now, and say so in no unmistakable terms.

THE SEA OF MY DILEMMA IS THE SOCIALIZATION OF MEDICINE. THIS YOU WILL NOT HAVE; THEN, YOU MUST TAKE THE DEVIL—THE SOCIALIZATION OF WEALTH

Omnipotent Nature Prevents Professional From Socializing Health: Keen Witted Physicians Protest the Socialization of Medicine, Hence Educators Hired by Capital Demand Socialization of Wealth

To hear a doctrine calling for the socialization of all wealth emanate from the great American University that from genesis to exodus is built upon the essence of capitalization, impels one to reach for a volume of "King Lear."

Truly, "How sharper than a serpent's tooth 'tis to have a thankless child."

When the subsidiary phrase is mouthed to the effect that "since health cannot be socialized, wealth must," the dictionary of quotations again comes in handy. This time with the comment, "Needs must when the devil drives."

Few outside of the cognoscenti,—and to be honest, only a few of that learned group,—realize just what is going on out at the luxuriously equipped institution known as "The Midway University." A hotbed of theorists, spawning anarchy in the name of the search for truth, and frenzy in the mask of reason, spurning any gods save those of their own fashioning, what a mockery, what a nose-thumbing, is thus created against the mild old gentleman who for so long has been "the hand that feeds' to this assemblage of much brain and little balance!

John D. Rockefeller, founder and head of the Standard Oil company, made possible this great western center of learning. It is almost a simonpure Rockefeller concern. Now Mr. Rockefeller from all accounts, is, as an individual, a level-headed, simplicity adoring, systematic, order-loving and religious old gentleman. He has lived long enough in this vale of unrest to know that a thing is not necessarily excellent just because it is new, surfacely speaking, or absolutely bad because it is old.

After all, there is little new on earth. Rather do we live in a sequence of revivals, based upon the survival of the fittest. To quote again, hark back to Goethe, "There are so few voices and so many echoes."

No matter how raucous an echo may be it is only in untoward and unfrequent instances that the coarse vibrations of a reverberating echo destroy the vessel in which the echo rings.

Casual prophecy as to matters out at the University of Chicago,—and that excusably enough,—is that this exception is about to preempt itself into proving a rule right out on the steam-heated sidewalks of the famous Quadrangle.

For almost a quarter of a century, the University of Chicago, to a large extent, has set out to prove that everything that is, was or is wrong and that nothing in the heavens or on the earth or in the waters upon the earth is what it seems to be.

To this end the dream-book sociologists and allied artists embrace revolutionary doctrine after revolutionary doctrine. Among others have been espousal of socialistic schemes so absurd to the balanced mind as to be considered impossible of implantation in a free American state.

In the beginning, there was a great Prussian influence at the Midway school. That was when Germany throughout the civilized world stood for law and order. That was before Germany

prostituted that great asset of any nation, the medical profession, into its decay and retardation through obnoxious state medicine.

For John D. Rockefeller loves system. Order and system have made possible the gigantic Standard Oil. So German influence and "hands across the sea" were persona grata!

So far as Mr. Rockefeller is concerned, and other such rational donors to the University as the Swifts, Ryersons, Hutchinsons, Mandels, and Cranes, it is impossible to believe that they are aware of some of the doctrines uttered at the University by the men and women on their payroll. Does John D. Rockefeller know that within the past few months one of his "paid help" has flouted religion and denied a God beyond that pagan deity of health? Does he know that another says that "efforts to save the American home are misdirected; that it has served its day and its influence is not needed any more?"

Does John D. Rockefeller, fighting to save the standards of the American home in some branches of his own family, subscribe to that doctrine? Hardly would it seem so. And is he for the socialization of medicine even in such sugar coated fashion as one of his servants in the vineyard of the mind would appear to inculcate?

At the annual meeting of the Chicago Medical Society, Oct. 14, 1925, Prof. T. V. Smith of the University of Chicago in a paper "Ethics and Health," announces vaguely and with great blandness that since health can't be socialized wealth should. To the man up a tree it looks as if what most of the reformers want is merely the *job* of reforming rather than its objectives. Something to socialize! Nature and its processes, revolting from man made direction, then the busy bees of the red-flagged hives must needs content themselves with the institutions man has built as a bulwark between himself and nature. The system is similar to getting on the far end of the limb as you saw it from the tree.

Mr. Smith may not have meant to place himself in that position, nor his University, either. Citations from his paper would seem to clinch the statement that he has achieved both ends. Among other Smithisms to this great result one may cite:

"Misdemeanors and crimes are gradually but surely becoming illnesses and diseases; and this is law transformed into a science, and savage punishment for vindictiveness into civilized treatment for human amelioration. *Ethics ceases to be an esthetic means to an esoteric good, and stands forth as a quest for full living in the ways of health.* The same metamorphosis has furnished religion a norm of healthy-mindedness by which it may purge, and actually is purging itself at last from the authority of sick souls—from anemic Jesuses, from psychopathic Pauls, from epileptic Peters.

"All this is to say that you doctors have furnished us not only with greatly improved health but you have made dominant in the thought of the day the ideal of health. . . The rise of psychiatry among you . . . heartens intelligent laymen to believe that you will grow with your triumphs until you take the whole field of life for health. . .

"Health is so democratic a conception that it almost compels democratic practice. *One may acquiesce in the giving of wealth and luxuries to the very few . . . even in the United States two per cent. of our people own more than sixty per cent. of our wealth. But who could with composure think of the same aristocratic distribution of health, two per cent. supremely well and ninety-eight per cent. sickly?*

" . . . As medicine works more and more to make health democratically available it willy-nilly throws its influence solidly *towards the democratization of both industry and education.*

"In the long run we shall demand in the name of health that nobody shall be really poor as long as anybody is actually rich. . . The socialization of medicine? This you will not have? Then you must have the socialization of wealth."

There are veiled euphemisms in Prof. Smith's demands but those who are accustomed to taking the aloes out from the sugar coat of socialistic pills can taste plainly Mr. Smith's unpalatable invitation to chaos through the socialization of wealth. Russia stands as a red light on the path to prostitution of what is finest and best in the moral code as evidenced through centuries of experiment. The socialization of wealth will come about most nearly, if ever, through the socialization of human nature. This does not mean a leveling of the high places but an elevation of the morasses. It cannot come with jus-

tice and equity until the "leaners" became at least half-way "lifters." It seems too much to expect, short of the millennium, that all men shall be standardized in mortal life, even though in the "sight of God they are free and equal." Just how this equalization stacks from a pagan viewpoint provokes quizzical comment. It will be remembered that the Spartans left their aged, their infirm, their weak and also their deformed babies on the hillsides to die. Rather strenuous socialism. Mr. Smith and his confreres would tear down the existing structure of civilization, a faulty mosaic, to be sure, yet one put together with infinite pains and a mosaic in which the man who labors has some return for his labor. Where incentive, the biggest mortal mainspring the world knows, spurs the individual to self-exertion. Remove this incentive by making it possible for the man who will not work and who refuses to learn how to work to fatten on the labor of those who do work and view the result. Compulsory labor at the behest of the state, even in rotation of trade is not a success.

No man can shine in every profession. The adage, "Jack-at-all-trades, and good at none" should be elucidated to those socialists who fancy every man can do his brother's trade as well as his own. The most rabid capitalists are bred from the ranks of trades unionism. Let a man once experience the joy of acquisition and, so far back as human experience traces, his tendency is not towards altruism but rather towards ego-ism. Socialization of wealth can not permanently come about through any system other than that by which aggrandizement of wealth has been made possible. That is, by the law of competition and personal effort.

There will be mistakes and injustices, of course. Even nature produces blemished fruit. But because the pear crop fails from a few of the trees of the orchard, does the wise horticulturist plow up the countryside, devastate his wheat field as well as his orchards and also his neighbor's strawberry patch? He does not!

Mr. Smith, like all theorists, is blind to the duality of life and the balance of the harmonics. "So God created man in his own image, in the image of God created he him; male and female created he them." If one refuses this glory to God, then let the onus rest on nature, which is bi-sexual, diverse and variant to the lowest form of created and existent thing.

ABOLISHMENT OF HOME AND TRANSFER TO STATE OF CHILD REARING ADVOCATED BY WOMAN PSYCHOLOGIST AT UNIVERSITY OF CHICAGO

DR. MARGARET DANIELS OF THE UNIVERSITY OF CHICAGO HASHES UP FOR AMERICAN WOMEN ROUSSEAU'S RENAISSANCE THEORY ABOUT HOMES AND BABIES: "BREED AND DISCARD," THE NEW SLOGAN.

Below is printed an editorial from the *Detroit Free Press* of June 8, 1925, reporting the speech made by Dr. Margaret Daniels of the University of Chicago before the midwest conference of the National Woman's party.

Of course Dr. Daniels merely presents in the vernacular, with a great many flash-in-the-pan comments, that old and selfish doctrine of Jean Jacques Rousseau:

"The parent should produce the child, the state rear it."

Unfortunately in a democracy each citizen is in the condition of that king of France who remarked:

"L'etat? L'etat? L'etat est moi!"

Every voter, active or potential, has a right to repeat, "The state? The state? I am the state." Unfortunately this fact is lost sight of by reformers, both when they wish to secure "Federal aid" or "Federal relief." The individual who seeks federal relief, seeks help from himself. The state has only what the taxpayers pay into it; produces only what its populace wrings from soil and industry and natural resources. For this sort of fairy godmothership one is moved to repeat the woman's definition of Christian science which ran to the effect:

"After watching what Christian science does to my relatives I am sure that the doctrines of Mrs. Eddy afford an excellent excuse for not doing what you should but don't want to, and for doing everything that you want to do and shouldn't."

Do the sponsors of the University of Chicago as individuals and as citizens of the United States subscribe to Professor Daniels' doctrines? Or have they any idea what she talks about any more than she has herself? As for "vibrant women"—that's a new name for the results of the doctor's doctrines—the profession employing those methods really was followed by women long before they ever had their pretty white

hands on the ballot box. A pekingese, of course, is far preferable to a child in the minds of many well-kept, well-fed theorists and parlor revolutionaires.

The following is the quotation from the *Detroit Free Press:*

DR. DANIELS' "VIBRANT WOMAN"

In the very middle of the hot spell, when, as a professor of psychology, she should have been alert to the necessity for keeping a close check on her fervid imagination, Dr. Margaret Daniels journeyed here from the University of Chicago to inform the midwestern conference of the "National Woman's party" that efforts to save the American home are misdirected, that it has served its day, and its influence is not needed any more.

The fact that "so many middle class women are content to live protected in the home is one of the greatest obstacles to women's progress," the doctor announced, and thereafter provided the public with an enlightening sample of the stuff she dishes up to her pupils by expressing the pious hope that "we may be able to educate a race of girls to whom the idea of marriage is only incidental."

Some people might gather from this remark that Margaret advocates free love. We content ourselves with quoting her assertion that "the dreadful finality of marriage as now constituted is what is keeping women back, intellectually and spiritually. In the future, they will think only of mating, not of marrying."

In view of the divorce record for the country, it may be rather hard to keep a straight face and read Dr. Daniels' condemnation of the holy estate of matrimony—which she evidently does not consider at all holy—because it is too final.

But control yourself and read what the doctor thinks the advanced woman of the future is to be. This happy being is not going to spend most of her time adorning herself to please men. She won't have to. "The new woman will think more of spiritual beauty. She will be a vibrant being, so full of energy and imagination that she will attract men without trying to. With her, home life will be only incidental, her career, her work will be the first interest."

All of us have met or seen female beings so full of energy and imagination that they "attract men without (apparently) trying to," and have no time for the performance of domestic duties. Many a "middle class" wife with a philandering husband knows of one or more. They abound in the ranks of that big army of co-respondents which today is nobly pioneering in the effort to eliminate the worn out American home. They certainly are vibrant; and we suppose they must be spiritual, else they would not continually talk about soul mating. But we are afraid there isn't much "new" about the breed. They are as old as the eternal triangle.

However, whether new or old, these advanced members of the sex will not fail to hail joyfully one feature of Dr. Daniels' beneficent program because it is designed to remove a social condition which at present badly cramps their style.

The doctor says that in the coming era parents will not be bothered with the care of offspring. The state will look after them, leaving men and women free to pursue their "careers," and, we suppose, each other.

As everybody knows, nowadays when one of the emancipated vibrant beings has a child, quite by accident, she either ceases to be vibrant or she tries to get rid of her encumbrance. Consequently the "baby farms," the orphanages and the boarding schools are crowded with waifs. If there were some way of turning all the "little consequences" over to the state automatically, that would be heaven for the vibrant mother. The fact that it might be hell for the child wouldn't count.

Here we refrain, except to suggest some questions. What are those mysterious careers which Dr. Daniels thinks are more important than wifehood and motherhood? How do the parents of the college girls who sit under the doctor's tutelage like the stuff she dishes out? What do the girls themselves, the normal ones, really think of their instructress? As most college girls have an alert sense of humor, probably the reply to the last query would be the most interesting of the three.

A NATIONAL HOME FOR AGED, INDIGENT OR DECREPIT PHYSICIANS. THIS IS THE FIRST MOVEMENT OF ITS KIND IN AMERICA

We Hope the Medical Profession Will Answer the Call and Will Send Generous Contributions to the National Treasurer

Announcement was recently made by President Robert T. Morris, M. D., of The Physicians' Home, Inc., that an endowment campaign has been started by the Directors of the Home for the purpose of raising funds to endow a *national home* for aged and incapacitated physicians who are left without financial resources in the autumn of life.

The sum sought for the home has not yet been determined, but it should run into several millions of dollars, so as to guarantee the upkeep, through interest, of the national home and the several smaller units to be placed in the different states as may be determined later.

The Physicians' Home, Inc., is not an experiment in any sense. Four years ago one unit was established at Caneadea, N. Y., through the generosity of Dr. Stephen V. Mountain, who generously donated the property and building at

Caneadea, N. Y., and it has met with such great success that the directors believe it their duty to enlarge the scope of the enterprise, because of the large waiting list which they are unable to accommodate at the Caneadea Unit.

The general plan outlined by Dr. Robert T. Morris and his associates, is to care for a thousand or more physicians at the national home and a dozen or more individuals in the smaller units.

At the present writing it would seem that a million and a half or two million dollars would be necessary, which sum would be invested in bonds of the securest and highest earning value, so as to secure an adequate return in interest to maintain the home and the units without recurring appeals to the medical profession or to the lay-man and woman.

The directors have in mind certain properties that will be had through gift or purchase. The character of the directors is such that the project is guaranteed as to its worthiness and feasibilty.

The directors have had the project of a national home in mind for several years, but being practical men they though they would try it out in the unit established at Caneadea, N. Y., and the success of this unit has been such that they now feel the time is propitious for a national campaign to which the medical profession will be asked to subscribe as their circumstances permit and public spirited citizens also will be asked to contribute.

The plan of campaign is not in any sense a "Drive." The funds are to be secured through the organization of interested groups in the various cities and towns, and it will take probably a year in this way to put over a campaign that will be dignified and in accordance with the high standard and ethics of the medical profession.

Dr. Charles H. Mayo of Rochester, Minn., has given his unqualified endorsement to the movement and is heading the Committee of Sponsors who will have the campaign in charge. Other prominent physicians and lay-men will also serve as sponsors.

The officers and directors of The Physicians' Home, Inc., are Robert T. Morris, M. D., President, 114 East 54th Street, New York, N. Y.; William H. Dieffenbach, M. D., Vice-President, 50 Central Park West, New York, N. Y.; Albert G. Weed, M. D., Treasurer, 152 West 57th Street, New York, N. Y.; Silas F. Hallock, M. D., Secretary, 901 Lexington Avenue, New York, N. Y.; Warren Coleman, M. D., 59 East 54th Street, New York, N. Y.; Max Einhorn, M. D., 20 East 63rd Street, New York, N. Y.; Wolff Freudenthal, M. D., 24 W. 88th Street, New York, N. Y.; J. Richard Kevin, M. D., 252 Gates Avenue, Brooklyn, New York; Stephen V. Mountain, M. D., Olean, N. Y.; Ralph Waldo, M. D., 54 West 71st Street New York, N. Y.

The campaign will be in charge of Mr. Charles Capehart and Mr. James F. MacGrath, and the national headquarters have already been opened on the 22nd floor of the Times Building at 42nd Street and Broadway, New York City, to which all inquiries should be sent.

All checks should be drawn to the order of "The Physicians' Home, Inc.," and should be forwarded to Dr. Albert G. Weed, National Treasurer, 22nd floor of the Times Building, 42nd Street and Broadway, New York City.

This is the first movement of its kind for physicians in America seeking to secure funds, the income from which will sustain an institution or a series of institutions, having for their purpose the care of those in the medical profession who through generosity, unpaid service, or who through their devotion to the pure science of medicine and laboratory investigation with its small financial return, or who through illness or incapacity find themselves in their declining years unable to provide themselves and their dependents with the necessaries of life.

Of course, the medical profession has its percentage of those who have not had the training or opportunity to lay away sufficient money to finance them in their old age. Then, there are those who have not had the habit of collecting their bills, and who have suffered thereby; and it also will include the younger men in the profession, who, falling ill, have no place to go and none to care for them during their illness. To these latter this home and its units will prove a great blessing and God-send in administering to their needs until they regain health and can again take up the work of their profession.

This is not intended as a pauperizing movement, nor is the campaign to be one in which there is to be a "sob-element." It is rather to be a dignified effort on the part of the profession itself to take care of its own needy ones and

who ask the cooperation of the generous and well-to-do lay-man and woman to help.

From time to time we shall take pleasure in publishing the news of the campaign as it proceeds and it is our earnest hope that the medical profession will answer the call and will send generous contributions to the National Treasurer without waiting to be solicited further.

In no case more than in this appeal can one more definitely give twice by giving what he can quickly. The sooner funds are received the sooner the enterprise will be serving the deserving physicians.

The name tentatively selected for the Home is "Tranquillity"; a name that adequately defines peaceful comfort to all found within its walls.

The general plan is to have the Home so laid out that it will typify a real home within which are to be found all those little creature comforts essential to the peace of body and mind of those who are to be the beneficiaries.

One of the features will be a laboratory where the old physician may continue his investigations and study, and thus give him an opportunity of employing head and hand and heart for the advancement of his profession.

Another feature of the Home will be provision for the wife or other dependents of the physician so that families may not be broken up.

It is anticipated that the campaign will be inaugurated by a banquet in New York City to which the profession generally will be invited, as well as prominent lay-men and women.

Speakers of national repute and standing will launch the enterprise.

Remittances should be sent to *ENDOWMENT FUND CAMPAIGN THE PHYSICIANS' HOME INC., CAMPAIGN HEADQUARTERS,* Times Building, 42nd Street & Broadway, New York, N. Y.

THE PRACTICE OF CHIROPRACTIC ART COMES WITHIN THE PROVISIONS OF THE STATUTE REGULATING THE PRACTICE OF MEDICINE

In the case of the State v. Morrison (W. Va.), 127 s. e. r. 75: In this case the Supreme Court of Appeals of West Virginia, in affirming a judgment of conviction of the defendant for practicing medicine and surgery as defined by Section 8a, Chapter 150, in the 1923 code of that state, without first having obtained a state license to do so, says that the weight of authority is to the effect that one who practices the chiropractic art or science comes within the provisions of a statute regulating the practice of medicine. Said Section 8a provides that the term "practice of medicine and surgery" as used by the West Virginia statute shall be construed to be the "treatment of any human ailment or infirmity by any method"; and that "to open an office for such purpose or to announce to the public in any way a readiness to treat the sick or afflicted, shall be deemed to engage in the practice of medicine and surgery within the meaning of this act." One who opens an office and announces to the public in any way that he is ready to treat the sick and afflicted, and has actually treated cases of paralysis, constipation, rheumatism, neuritis, sick headache, kidney trouble, lumbago, liver trouble, and divers other diseases by adjustment of the segments of the spinal column according to the chiropractic method of treating human ailments and infirmities, this court holds is "practicing medicine and surgery" as defined by said section.

The scope of the definition of the practice of medicine and surgery in Section 8a is too broad, its terms too explicit, and the intention is too plain to allow it to be modified and restricted by the former legislation. The mere fact that a school of medicine is not specifically mentioned does not in itself evidence an intention of the legislature to exclude it from the operation of the statute, if from a consideration of all its provisions the contrary clearly appears. The legislature cannot be expected to anticipate the founding of new methods of healing. It has by this statute evidenced its intention to regulate the practice of all medicine and surgery.

Nor does the court agree with the defendant's contention that, if the statute be construed to require him to pass an examination on the science of medicine, drugs and materia medica, as recognized and taught in Class A medical schools, or on the methods or practices peculiar to surgery as therein taught in order that he might lawfully practice his method of treatment of human ailments and diseases, then the statute would be unconstitutional and void as depriving him of the pursuit of a lawful calling as a means of acquiring property and obtaining happiness and safety. The statute does not contravene any

of the rights of the defendant guaranteed to him by the West Virginia and the federal constitutions. It is undoubtedly true that the privilege of engaging in the practice of medicine is a valuable property right protected by constitutional guarantees. But the preservation of the public health by the sovereign power is paramount to the exercise of the private privilege by the individual, and consequently the state has the inherent right by means of its police power to impose such reasonable restrictions on the practice of medicine as are deemed necessary to attain the end in view, the preservation of the public health.

DOCTOR ARE YOU DOING YOUR PART? HAVE YOU SUBSCRIBED TO THE LAY EDUCATIONAL FUND?

If This Work Is to Continue Every Physician Should Co-operate to the Limit of His Ability

Since the October issue of The Journal was published the following Doctors have subscribed to the Lay Educational Fund.

Chicago and Cook County Subscribers

Edward Lyman Cornell.

F. P. Thompson.

Down State Subscribers

I. A. Botts—Industry.

G. R. Blackstone—Macomb.

Subscriptions thus far received have been directly acknowledged by the Lay Educational Committee, as well as by publication from month to month in the Journal. In the future only the previous month's subscriptions will be acknowledged in the Journal.

MAKE CHECKS PAYABLE TO THE ILLINOIS STATE MEDICAL SOCIETY

Name .....M. D.
Street .....
City..... County.....

Sign the above pledge card, make out a check payable to the Illinois State Medical Society and mail both in an envelope addressed as follows:

From
.....
.....
.....

ILLINOIS STATE MEDICAL SOCIETY,
c/o Cashier, Sheridan Trust and Savings Bank,
4738 Broadway, Chicago, Ill.

WHY THE INCREASE IN GALL STONES, GASTRIC INTESTINAL ULCER, APPENDICITIS AND THYROID DISEASE?

Death Rate in These Ailments Jump 75 to 250 Per Cent in Twenty Years

Dr. A. Murat Wills at the recent meeting of American College of Surgeons in Philadelphia pointed out that during the period from 1905 to 1922 death from gall stone had increased 77 per cent; from gastro intestinal ulcer, 75 per cent; appendicitis, 31 per cent; and the mortality rate accompanying thyroid disease showed the stupendous increase of over 250 per cent.

Dr. Wills believes that these differences are not merely due to chance but suggests there may be found more plausible explanation for the decrease of mortality rate in other diseases, while no less definitely, it may be explained why we are having a steady increase in the number of deaths due to gall stones, ulcer, appendicitis and diseases of the thyroid.

ANATOMICAL DRAWINGS, CHARTS, ETC., MADE TO ORDER

Anatomical charts made perfectly in monochrome or color by expert at reasonable price. Tracing of operations and illustrations for medical publications. Bones, muscles, organs or complete cadaver. Address M. H. West, 1220-A North Dearborn Street, Chicago, Illinois.

WE PAY PHYSICIAN'S, SURGEON'S, OSTEOPATH'S AND CHIROPRACTOR'S TREATMENT—THE LATEST THING IN LIFE INSURANCE

The American Underwriter Insurance Company of Peoria, Illinois, has an accident insurance policy one feature of it which reads as follows: $10.00 per year; no medical examination.

We will furnish you with an Accident policy which pays you $5,000.00 if accidentally killed in any manner, $5,000.00 for accidental loss of both eyes, or both feet, or both hands, or one hand and one foot in any manner, $2,500.00 for accidental loss of one hand, or one foot in any manner, $1,250.00 for accidental loss of one eye in any manner, $25.00 per week for total loss of time for one hundred four weeks resulting from an accidental injury in any manner, $12.50 per week for partial loss of time for ten weeks as a result of an accidental injury in any manner. *We pay for medical attendance for minor injuries which does not keep you from your duties and where no other claim is made, including physician's, surgeon's, osteopath's, and chiro-*

practor's treatment up to the amount of $12.50. We also furnish you with identification card and agree if by any reason of accidental injury in any manner, the insured be physically unable to communicate with friends, the company upon receipt of advice at the home office at Peoria, Ill., giving your policy number (which is on your card) will defray all expenses necessary to put you in communication with and in care of friends, provided such expense shall not exceed $50.00. All the above if the insured be accidentally injured in any manner, the only restrictions we make is in ballooning and aviation.

WE FURNISH ALL THE ABOVE WHICH COVERS EVERY INJURY FOR JUST $10.00 PER YEAR, payable $2.50 quarterly, $5.00 semi-annually, or $10.00 annually—about two and one-half cents a day. We pay for the first day. CAN YOU AFFORD NOT TO CARRY THIS INSURANCE?

No medical examination is necessary.

Note: We are wondering how this up-to-date life insurance company can overlook the opportunity of compensating Christian Scientists for absent treatment. Perhaps the schedule of fees acts as a deterrent factor in preventing the employment of the modern healer. Certainly the services of the absent doctors giving treatments from a thousand miles distant would prove essentially as valuable as the "cults" enumerated above.

HIRING DOCTORS AT DEPARTMENT STORE PRICES AND SELLING THE MEDICAL SERVICE ON A PROFITEERING SCALE

A Corporation or Middle Man Making the Profits on the Medical Service

The following from the October 19 issue of the *Wayne County Medical Society* shows the present trend of thought and action by many lay corporations and organizations:

A short time ago a gentleman slipped on the train at Chicago and slid off at Detroit with a feeling of confidence and prosperity. Detroit suckers and Detroit doctors would measure up well with those of Chicago. We use the term suckers advisedly, referring particularly to those gullible people who have the fear of God in their heart and that of death in their heads. An enthusiastic zest spurred Mr. Young as he left the Michigan Central Station. Breakfast and the inevitable Camel soothed his active brain.

He repaired leisurely to the office of a prominent bank official. "You are right," said the banker, "folks need more regular attention. Detroit doctors are not aggressive enough—your proposition sounds good." Writing a name and address on a slip of paper he closed the interview, handed the slip to Young and told him to "see that man."

Promptly at two o'clock Mr. Young called at the doctor's office whose name had been given him by the banker and and a dialogue substantially as follows ensued:

"My proposition is this, Doctor: In Chicago, I have been operating a Bureau of Health Analysis for some time. In Detroit we have already acquired approximately six hundred clients who send speciments to Chicago. They will continue to do this until the first of the year, when our new arrangement will be in force. I propose to continue a campaign here in Detroit and I want you to look after the laboratory end of it, which by the way is all there is to it. As a matter of fact I have secured in Detroit during the last few days approximately ninety subscribers at fifteen dollars each. Our clients furnish four speciments of urine a year and we give them four reports a year. We pay you forty cents for each specimen analyzed, which includes a microscopical as well as chemical examination. Occasionally some one requires a little advice or a diet slip, in which case you will receive twenty cents more. With three thousand subscribers and no overhead it is easy money, and I estimate that we can get that many.

"Yes,'" suggested the doctor, "but any reputable laboratory will do the analysis that you furnish for $2.00, and many doctors will make such an examination, including a fairly good physical examination for five dollars."

"That makes no difference in this work, since there is not one man in five hundred who knows it."

"Do you advise these clients, as you call them, to consult their family doctor in case anything is found wrong with the urine?"

"Yes, as a rule, but we would be able to influence many of them to return to you for advice, thereby increasing your revenue."

"Then, as I understand it," said the doctor, "I stand a chance of picking up quite a few patients out of this deal as well as the forty cents for each quarterly examination."

"Yes, you have the idea, and in my opinion you ought to grab it."

"Well, my friend, I must admit that your proposition interests me. However, I would like to give it a little thought. Could you come in and see me again tomorrow?"

Mr. Young did not return. We suspect that someone disclosed to him the fact that he had been interviewing the President of the Wayne County Medical Society.

Just another "Rufus Wallingford" looking for a "Blackie Daw" as an accomplice and we are not so sure but that he will find one. There have been several similar schemes worked out upon a much grander scale here in Detroit, all of which have failed The "suffering public" is rightly named.

Gentlemen of the Wayne County Medical Society, you have here the facts as accurately as we understand them, presented by our improvised dia-

logue. It requires no super mind for you to understand that the people—your patients—are being "gyped." Sell them the proposition yourself—and add to it a physical examination.

MEDICAL TAXES SHOULD BE REDUCED

Exemptions Are Permitted to All Trades, Industries and Mercantile Organizations That Send Their Representatives to Various Parts of the Country

Representatives of Association to Appear Before Ways and Means Committee

At a hearing before the Committee on Ways and Means of the House of Representatives held at Washington, October 21, a presentation of reasons was made for the reduction of the existing war tax on physicians under the Harrison Narcotic Law. The American Medical Association was represented at the hearing by Dr. Charles W. Richardson, Washington, D. C., member of the Board of Trustees, and by Dr. William C. Woodward, Chicago, executive secretary, Bureau of Legal Medicine and Legislation.

Dr. Richardson pointed out to the committee that prior to the war the federal tax or fee paid by physicians for a license under the Harrison Narcotic Law was one dollar. He said that the medical profession of the country gladly accepted the increased war tax of three dollars and that the profession did everything in its power to make the law effective. He said that, as many of the war taxes are being removed, this increased tax against physicians should now in justice be restored to the rate existing prior to the war.

Dr. Woodward stated that it is clearly a question of whether Congress will or will not reduce a war tax; that the present rate of three dollars was effected by the Revenue Act of 1918 along with other increases; that these other increases have, to a larg extent, been removed or reduced.

"For a number of years," said Dr. Woodward, "the tax derived from physicians under the narcotic act was nearly a half million dollars greater than the expenses of enforcing the act. Obviously, that was as it should be if one were dealing with a measure intending to raise revenue. Recently, however, the plea was made that inasmuch as approximately half a million dollars a year was being collected under the law, therefore the appropriation should be increased so as to permit the use of the entire amount for enforcing the law. That argument was accepted and an increased appropriation of half a million dollars was made. So it is not fair to take the cost of enforcing the law and fix the tax on that basis.

Representative W. R. Green, chairman of the committee, made the significant remark, "I suppose you are inclined to think that in any event the burden of enforcing the law ought to be on the whole public and not on the medical profession." The remark of Chairman Green may be regarded as the crux of this proposed tax reduction. The enforcement of the law is clearly an expense which should be borne by the public generally and not by the medical profession alone. Under no conditions can it be claimed that the enforcement of a general federal statute should be paid for exclusively by any class or any profession.

Drs. Richardson and Woodward also presented two proposed amendments to the existing federal income tax law; first, authority to deduct expenses incurred in attending meetings of scientific and professional organizations; and second, expenses of postgraduate study.

Dr. Richardson stated that, in the revenue acts of 1921 and 1924, exemptions are permitted to all trades, industries and mercantile organizations that send their representatives to various parts of the country. Dr. Woodward argued that the medical profession should be entitled to the same privilege, which has been denied to physicians under rulings of the Commissioner of Internal Revenue. The extent to which physicians are members of medical organizations and attend their meetings was shown by Dr. Woodward. He stated that inquiries were adressed to ninety-eight medical organizations, and seventy-seven of these reported their membership. The total membership of these seventy-seven medical organizations was 177,219. He stated that the estimated cost of attendance was $1,718,000. On a 4 per cent basis, the tax amounted to $68,726, which is a very conservative estimate of the federal taxes paid by the medical profession under this particular section of the law because of the adverse rulings of the Commissioner of Internal Revenue.

The Committee on Ways and Means will continue to hold hearings for a considerable time, and will then go into executive sessions for the purpose of drafting the new federal tax bill to be considered at the December session of Congress.—*Jour. A. M. A.*, Oct. 31, 1925.

MEDICAL ARTS CLUB OF CHICAGO CHANGES NAME AND INAUGURATES NEW PLANS

At a meeting of the board of directors of the Medical Arts Club, held October 30, it was unanimously voted to change the name of the club to the Medical and Dental Arts Club of Chicago. C. N. Johnson, D.D.S., retiring president of the American Dental Association, was elected a member of the board of directors. Mr. John A. King was elected as business manager in place of Mr. David MacLean. The report of the Chicago Trust Company, trustee, showed that there were in the hands of the trustees $214,173.08 as a nucleus for a building fund. Plans for a building include an assembly hall seating from 700 to 800 for the regular meetings of the Chicago Medical and Chicago Dental societies and for other professional meetings and conventions, rooms for the various local special societies, headquarters for the Chicago Medical and Chicago Dental societies, the Illinois State Medical and Dental societies, the American Dental Association and others; club rooms for the convenience of the members; bedrooms for resident and out of town members and guests; the remainder of the building, including 75 per cent of the total available space, to be rented as stores, offices and salesrooms to firms doing business with physicians and dentists.

HOSPITALS FOR PERSONS OF MODERATE MEANS

At the recent conference of the British Hospital Association, it was pointed out that an increasingly large number of persons of moderate means are finding it more difficult to secure the advantages of recent advances in medicine on account of the expense, and that large numbers of the middle classes are forced to seek treatment in voluntary hospitals with the result that waiting lists obtain inordinate dimensions.

Among the suggestions proposed for the relief of this condition is the extension of hospital wards to paying patients.

UNIVERSITY OF WISCONSIN PUTS ON A FULL MEDICAL COURSE

Heretofore the University of Wisconsin has offered a two year course in medicine at Madison. On account of increased clinical facilities the University is now able to offer a full four years' course. The third year will begin in 1925 and the fourth year in 1926.

Correspondence

SHORT STORIES WRITTEN BY MEDICAL MEN

MANY DOCTORS HAVE WRITTEN BOOKS OF FICTION WORTHY OF BEING RECORDED

To the Editor: I am interested in compiling a collection of short stories written by doctors. As many of these stories are published under assumed names, or the medical degree of the author is omitted, it is difficult to locate them. I am, therefore, writing to ask that if you or your readers know of any short stories published by medical men you will kindly communicate the fact to me.

Assuring you that any information relative to this matter will be greatly appreciated, I am,

Very truly yours, HAROLD HAYS,
22 W. 74th St., New York City.

ESTIMATING THE WEIGHT OF THE BRAIN ON LIVING PERSONS BY MEANS OF EQUATIONS

Anthropological Psychiatry

Washington, D. C., Oct. 18, 1925.

The the Editor: The term anthropological psychiatry is a new one in other languages as well as in English. In using this new term my purpose is to apply those facts and methods of anthropology to psychiatry which may be of most scientific value. One of the latest methods of anthropological research is to estimate the weight of the brain on living persons by means of equations. We cannot predict the weight of brain as exactly as astronomers foresee an eclipse, but I have combined an equation which I call the Lee-Welker-MacDonald formula, which so far as tested gives a fairly approximate estimate of brain weight on the living. The formula is as follows: (head length—11) x (head breadth—11) x (head height—11) x .000337) plus 406.01 equals cranial capacity in cubic centimeters, which multiplied by .93 gives the weight of the brain in grams on living persons.

Before, however, applying this combined equation to the living, I am now, for the first time, as far as I know, testing it upon the dead, where I make three measurements of the head, and then the brain is taken out and weighed; and the difference between the predicted and actual weight of brain is found. After I have tested this equation upon a sufficient number of the dead and found the percentage of error, it can be applied to the living both normal and abnormal persons.

I purpose to apply this equation to 4,000 patients in the Government Hospital for the Insane. As the error will be either larger or smaller than the actual weight of the brain, such errors in the case of large numbers of persons will balance one another, and give the approximate truth.

But it will be necessary to apply the equation to a sufficient number of normal persons for purposes of comparison. It is proposed to apply the equation to the 600 members of Congress as a control experiment for the normal.

As the largest number of insane is at about the age of 40, and as the average of the members of both Houses of Congress is between 40 and 50, such a control experiment will be of special value. Moreover, the insane in the hospital here at Washington come from all parts of the country.

The eleven (11) millimeters subtracted from each measurement of the head in the equation represent the average thickness of tissue on different parts of the head.

ARTHUR MACDONALD, M.D.,
Washington, D. C.

Note: Dr. MacDonald desires others to test the equations at autopsies and send measurements and estimates to him for which they will receive due credit.

Dr. MacDonald is the author of "Man and Abnormal Man," see U. S. Senate document No. 187, 58th Congress, 3rd Session, 788 pages.

Original Articles

THE INTERPRETATION OF THE COUGH SYMPTOM*

FREDERICK J. KALTEYER, M.D.,
Associate Professor of Medicine, Jefferson Medical College
PHILADELPHIA, PA.

Symptoms, or the reaction of the tissues to injurious agents, have been the chief guides in diagnosis since the beginning of the medical era. The investigation of symptoms has not, however, received the close attention it deserves, mainly because of the prevalent belief that the requirements of diagnosis are generally met by simply noting the presence or absence of symptoms, and that a clear conception of their mechanism is not essential. The reasons for this lack of interest or enthusiasm are on the one hand, a neglect to appreciate the true value of symptoms in distinguishing disease processes through knowledge acquired by a study of their production; and, on the other, the great difficulty encountered in pursuing this line of research, chiefly because methods for such investigation do not exist. The progress made in physiology, bacteriology, chemistry, and allied sciences has been as rapid as it has been remarkable, especially when compared to the tardy advance in symptomatology. Yet, with this high attainment in the so-called laboratory studies, none of us would venture the opinion that the facts acquired by an inquiry into symptoms are less valuable than those obtainable by laboratory methods.

The early manifestations of disease, especially in their acute forms, are chiefly those of disordered function, when remedial measures offer the best chance of success. The later stages are characterized in the main by alteration of structures.

The act of coughing consists essentially of a violent expiration, the air current being driven swiftly and forcibly through the bronchi, trachea, larynx, and mouth for the purpose of removing material from the air passages. As a rule, a deep and often quick inspiration precedes the expiration. Just before the expulsion of air, which is the main feature of the act, the vocal bands are approximated through the contraction of the adductor, constrictor or phonatory muscles of the larynx—the lateral cricoarytenoids, the arytenoids, and the thyo-arytenoids. The expiratory phase begins just before the separation of the approximated vocal bands, thereby causing the intrapulmonic pressure to rise momentarily. When the required tension is reached, the larynx opens, and the air sweeps out with the production of the characteristic cough sounds. Their acoustic qualities are due to the intensity of the air current, peculiarities in the tension of the vocal bands, differences in the diameter of the air passages, and variations in the consistency of material contained in the respiratory tract.

The muscles effecting the forcible expiration bring into action abdominal and thoracic groups; the muscles of inspiration—the diaphragm and intercostals; the muscles closing the glottis—the adductors of the larynx. They are governed by nerve mechanisms which concern:

1. Spinal centers and their efferent nerve fibers.
2. The inspiratory and the expiratory centers in the medulla, which excite and coordinate spinal centers.
3. The adductor laryngeal center and its efferent paths.
4. The various afferent nerves which stimulate the inspiratory, expiratory and adductor centers.
5. The cerebrum.

The existence of a special coordinating center controlling the act is still a matter of controversy. The evidence at hand lends weight to the opinion that such is not the case.

Coughing is generally volitional. When occurring during sleep, in soporous states, and in violent paroxysms, its purely reflex nature is suggested. It is difficult to determine to what extent it is an unconditioned or pure reflex, or to what degree it is a conditioned reflex, that is, one intensified by cerebral activity, perhaps volitional, since sensations of discomfort referred to the throat are often present.

Its mechanism appears to be as follows: In the unconditioned or purely reflex cough, the irritation to the afferent terminals being of a mild character, the nerve impulses are conveyed to the medulla, causing: 1. Increased activity

*Read before the Inter-State Post-Graduate Assembly of America, Milwaukee, Wisconsin, October 27-31, 1924.

of the inspiratory center; 2. stimulation of the adductor or constrictor center of the larynx; and 3. increased excitation of the expiratory center. (a) The inspiratory muscles; (b) the adductor muscles of the larynx, and (c) the expiratory muscles contract in response to this stimulation.

With more pronounced irritation, especially when located in the interarytenoid region (supplied by the superior laryngeal) impulses of greater intensity are transmitted, which not only reach the medulla where they stimulate the centers just named, but some of them pass upwards to the cerebrum where sensations are evoked and recognized as tickling, distress or pain referred to the throat. In the cerebrum, nerve impulses are now discharged and transmitted to the medulla. A purely reflex cough is converted into a more or less volitional act by the descending impulses which reinforce the function of the centers activated by the ascending impulses—conditioned reflex. The combined effects of the ascending and descending impulses intensify the action of the muscles innervated by them.

In volitional cough, impulses descend from the cerebrum to the centers in the medulla.

Causes—It is not the object of the author to attempt a systematic discussion of cough in various diseases in which it is symptomatic, but rather to emphasize its importance in some morbid affections with the hope of throwing light on its mechanism and clinical interpretation. Bedside studies, carried out in a painstaking manner, are the chief, if not the only, means for the solution of these problems.

The regions in the body susceptible to stimulation and the nature of the stimulus effecting the reaction, have been the subject of extended investigations, which, however, have not clearly elucidated this problem.

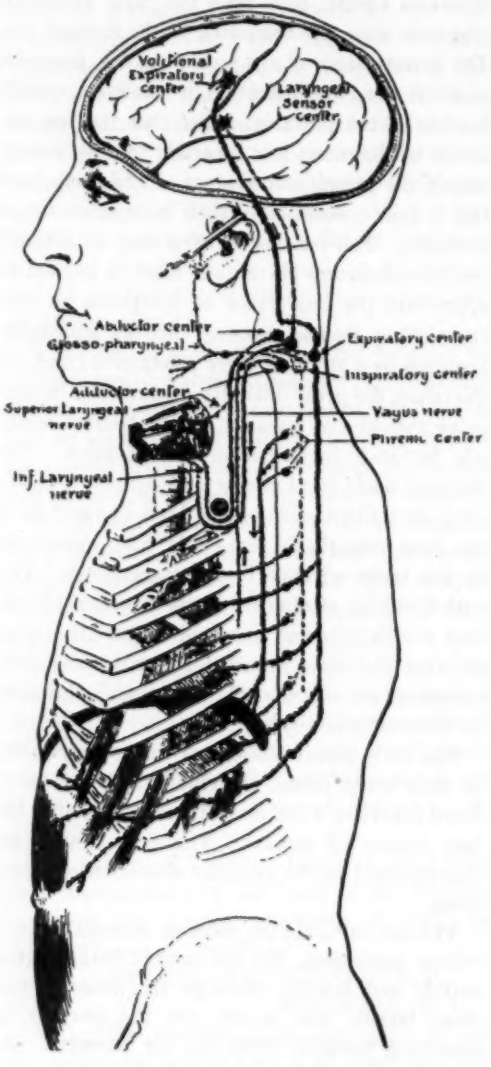
Cough may be produced by irritation in certain parts of:

1. The respiratory passages—larynx, trachea, bronchi, pharynx and naso-pharynx
2. The pleura
3. The mediastinum
4. The external auditory canal.

In reflex cough, the interarytenoid region is the chief area from which afferent impulses arise. Slight irritation of the normal mucosa in this locality by a variety of substances is followed by paroxysms of varying severity. This action is augmented when the organ is the seat of congestion and acute inflammation.

In pulmonary disease, as chronic ulcerative phthisis, when the products discharged from the diseased lungs and bronchi reach the larynx, they provoke coughing as a rule. These paroxysms often continue until all the phlegm is expectorated.

The Cough Mechanism



Evidence has been brought forth showing that

the tracheal mucous membrane is capable of evoking the act with certain forms of stimulation. Sudden pressure of a bronchoscope on the mucosa of the trachea produces it, but this excitation is quickly tolerated, shown by cough subsidence without removing the instrument. When, however, a new area is touched, it returns. This low state of sensitiveness stands in strong contrast to that of the interarytenoid region, where the irritation is resented, and must, as a rule, be removed before the seizure ceases.

The dry harsh cough so conspicuous in the early stages of many cases of influenza appears to have a treacheal origin. A clearer understanding of its mechanism in grippe points the way to better management in therapeutics.

Stimulation of the larger bronchi, especially at the bifurcation of the trachea, appears capable of causing the reflex. These structures have a low state of irritability. The morning paroxysms in patients suffering from chronic pulmonary tuberculosis are probably of bronchial origin. On awaking, when the individual changes from the dorsal to the sitting position or turns on his side, the secretions accumulated during the night suddenly shift and effect stimulation.

It is not known whether the reflex can be evoked by excitation of the smaller bronchi.

The question whether the vesicular structure of the lung is supplied with afferent nerve terminals is also impossible to answer definitely. Clinically, a negative opinion is offered in acute cases of pulmonary consolidation characterized by an absence of bronchial exudate, which run an atussive course. The author observed an interesting example of this kind occurring in a young woman who had an infiltration of the upper portion of the right lung, readily demonstrable by physical signs and x-ray examination. Constitutional symptoms, fever, and emaciation were present. After prolonged treatment in a sanitarium, recovery followed. At no time in the course of her illness did cough occur. Positive evidence of the existence of the symptom in parenchymal pulmonary disease is wanting, as it is impossible to exclude pleural and respiratory tract stimulation.

Painful, dry cough is a cardinal symptom of acute pleural disease. It cannot be stated whether it has its origin in the costal or visceral pleura, or the subpleural tissues, as the afferent nerve terminals supplying these structures have not been satisfactorily demonstrated in relation to this reflex. Its occurrence during aspiration of a pleural effusion, after much of the fluid has been removed, is a sign so well known to the clinician that it needs no special comment.

In mediastinal disorders involving the inferior laryngeal nerve by tension or pressure, as in anuerism of the arch of the aorta, it is an outstanding phenomenon. Text-books generally state that the ringing, dry cough of aneurism is caused by pressure on the recurrent laryngeal nerve, without offering a satisfactory explanation of its mechanism. Since the inferior laryngeal has essentially a motor function, nerve impulses are carried to the larynx, not to the medulla. Therefore, this does not entirely elucidate the problem. If, however, the symptom is analyzed more closely, it will be observed that with disordered function of the muscles of the organ, greater susceptibility of the nerve terminals of the superior laryngeal is acquired. The characteristic acoustic qualities of aneurismal cough are due largely to perturbations in the action of the laryngeal muscles.

The so-called ear cough is rarely diagnosed by the general practitioner, although sometimes a most distressing ailment. Without careful search, its cause is easily overlooked. It can be demonstrated in many individuals by lightly applying a probe to certain areas of the wall of the ear canal. The author had under his care a young woman suffering from violent attacks of cough of several years' duration, the nature of which was obscure. Fear was entertained that she was tuberculous, since her husband was the victim of this disease. A careful survey of her case relating to the pulmonary system gave negative findings. A highly sensitive inflammatory condition of the walls of the external auditory canal was the cause of her complaint. Appropriate treatment quickly caused a disappearance of her cough.

I have never been able to satisfy myself of the existence of a gastric origin for cough, nor from stimulation in disease of any of the abdominal or pelvic organs. The afferent nerve terminals appear to be confined only to the thorax respiratory passages, and ear.

Effects—A reaction of the tissues to noxious agents is injurious, protective or defensive, or indifferent. Within short periods, the degree of

response may vary so as to alter its usefulness or convert it into a harmful act. Tissue peculiarities, constitutional and local, are dominant factors in modifying reflex response. The influence of toxic states is generally depressive,—of acute inflammatory lesions, irritative.

The amount of expectoration, the readiness with which it is removed, the dangers of retention of material in the air-passages, and the influence of overstress on the lungs and circulation are matters too well known to the physician to require detailed description.

The efficiency of the act depends on the removal of phlegm from the air-passages without undue expenditure of energy. When caused by pathological disorders of the pleura, mediastinum, and auditory canal—regions which have no direct connection with the air-passages—its favorable influence, expressed in terms of sputum discharged, is entirely wanting. The severe racking paroxysms, so characteristic of the early stage of laryngitis, tracheitis, and bronchitis, before exudation takes place, often yield promptly to the influence of sedatives, which prevent injury from mechanical disturbances. One of the perils of influenza from the acutely inflamed trachea is the frequent, dry, noisy, and often painful cough, out of all proportion to the necessity to expectorate. Its dangers are not fully realized in the production of complications of this disease.

In cough, interference with the filling of the heart and retardation of the flow of blood through the vessels always occur, and, when pronounced or protracted, are responsible for cardiac asthenia, venous congestion, and bleeding. Conjunctival hemorrhage—the blood-shot eye—is well known to all of us. Serious accidents to the circulation are perhaps of more common occurrence than generally supposed. We can recall many cases which display the malign influence on the vascular system when the seizures are in excess of the needs to remove secretions, or when they are weak and frequently repeated, but lack strength sufficient to raise sputa high enough to be expelled. The author had under his care a young woman, who, at the age of nine years, had an attack of whooping cough, which caused extensive retinal hemorrhages. Unfortunately, the outcome was almost complete, permanent blindness. Its effect on the myocardium is shown in the case of a middle-aged man in whom profound myocardial weakness with low blood-pressure was the sequel of a protracted cough. Recently, I saw a middle-aged woman suffering from chronic valvular disease, in whom severe paroxysms prevented readjustment of compensation. The use of heroin, after other cough sedatives had failed, gave her relief and comfort, and finally was the means of strengthening the myocardium. The attitude of the profession in urging the passage of the measure, now enacted into law, prohibiting the importation and manufacture of heroin, is difficult to comprehend.

In computing the results of any plan of treatment in pneumonia, as with sera and pneumococcicidal drugs, due consideration must be given to the effects of mechanical disorders brought about by structural changes in the respiratory organs. The consequences of severe cough in favoring the spread of pleural infection, in aggravating pain, in causing wakefulness, in increasing the strain on the circulatory apparatus, are factors which influence the course of this disease and its mortality.

Disturbances of intra-abdominal pressure, from prolonged paroxysms, produce vomiting. The development of hernia is also due to this cause. A serious complication occasioned by the powerful expiration of the act was brought to my attention in the case of a physician, aged fifty-one, who contracted whooping cough. His illness was severe and the paroxysms were of such violence that three ribs were fractured. The diagnosis was confirmed by the x-rays. Although more than a year has now elapsed, he still has attacks of coughing when he leans back in a chair so as to cause pressure over the area which was the seat of the fracture. The explanation, I believe, is found in pleural stimulation which arises at a point where adhesions exist.

Extra-pulmonary varieties of cough—pleural, mediastinal and ear—are wholly or in the main injurious, and their diagnosis calls for special care.

The author expresses his thanks to Doctor Albert P. Brubaker, Professor of Physiology in the Jefferson Medical College, for valuable suggestions relating to the physiology of this subject and for the preparation of the diagram.

MENTAL HEALTH, A PUBLIC HEALTH PROBLEM*

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Problems of public health concern themselves with the well-being of society. Whatever threatens to a marked degree the physical integrity of the individual must be dealt with in an organized way by the group as a whole.

Well being, however, implies *well doing.* Without behavior appropriate to the needs of the individual and the requirements of society there can be no serious thought of health in the broadest sense of the term. Thus a campaign against typhoid in a city of aments or dements is inconceivable. Dualism of mind and body is scientifically unacceptable. The brain has evolved as the result of demands made upon the organism for increasingly complicated types of response to environmental stimuli. It is an organ of adaptation, just as is the hand or the heart, although its method of functioning is more difficult to appreciate. Much has been done to establish the activities and inter-relationships of various regions of the brain, but many mysteries still enshroud its operations. The greatest of these concerns the ego, the consciousness of self. A sense of differentiation from the environment, of personal pleasure and pain, etc., causes one to wonder if what we call the self can be no more than a combination of phenomena induced by the biochemical activities of the brain in response to the demands of the environment and the activities of the various bodily organs. Religion and metaphysics find origin in this refusal of the ego to identify itself with the other phenomena of matter. And yet, while many men of distinctive attainments in science, chemistry, physics and physiology, refuse to subscribe to a wholly mechanistic theory of personal identity, none presume to deny the dependence of mentality upon the physical state of the brain.

It is a matter of common knowledge that sclerosis of the cerebral arteries, with its consequent disturbance of brain nutrition, brings about difficulties in thinking and disorders of behavior. So, too, when a widespread area of cortical cells with their connecting fibers degenerate, as in paresis, senile dementia, Huntington's chorea, etc., mentality and behavior suffer. When alcohol has poisoned the nerve tissues these function poorly and a diagnosis is made of drunkenness, without thought of demoniacal possession. Various other drugs such as cocaine, morphin and hyoscin, and endogenous toxins such as are elaborated in the acute infections, toxic goiter and uremia have a marked effect upon mentation by way of producing deliria, excited states and stupors. The abnormal mental states of puberty, the climacterium and menstrual periods are commonly accepted as due to endocrine disturbances, and of late years this relationship of mind and body has been a fertile one for investigation and speculation.

Mental defectiveness is usually dependent upon a failure of brain development which can be demonstrated by the neuropathologist. The epilepsies constitute a group of behavioristic difficulties displaying certain common phenomena as the result of inherited or acquired cortical cell excitability, plus the effect of irritating substances manufactured in the organism, or, as in the case of alcohol, introduced from without. Dementia praecox is very possibly the result of an intoxication of certain nervous elements of the brain, perhaps in and about the basal nuclei, although present day laboratory methods fail to demonstrate pathognomonic changes. Lethargic encephalitis with its rather characteristic lesions is at times followed by manifestations which suggest those of dementia praecox, thus pointing to the possibility of a chronic or subacute intoxication in the same regions of the brain as the precipitating cause of the latter disease.

The frequent relationship of the neuroses and phychoneuroses to trauma, physical illness and the abnormalities of the sexual life is familiar to all. Child study reveals the fact that a considerable amount of behavior difficulty in the young rests upon an evident physical basis, i. e., insufficient and improper nourishment, bad tonsils and adenoids, endocrine imbalance, fatigue, etc. Everywhere we find evidences of the influence of matter upon mind, of the physical upon the psychic life. Evidently then the problem of treatment and prevention is essentially a medical one. Over 6,000 patients were admitted to the state hospitals of Illinois last year—over 4,000 for the first time in their lives; while upon the outside, in the every-day walks of life, 10,000

*Read before the Section on Public Health and Hygiene, Illinois State Medical Society, Quincy, May 20, 1925.

incipient cases were developing. Three thousand five hundred feeble-minded are now under state care and 2 per cent of our grade school pupils are defective. In the training schools for juvenile delinquents there are over 2,300 boys, girls and young men. The prisons contain another 3,500, and the community harbors many thousands more of potential neurotics, insane, delinquent and criminals.

After conceding the more evident relationships of mind and body there can be no good reason for consigning to the psychologist and the metaphysician those behavior difficulties of children and adults in which the connection is not so demonstrable. No line can be drawn through the midst of abnormal conduct to separate that which is physical from that which is psychic in origin. The problem as a whole lies in the field of medical practice. The physician, like the alcoholic of sainted memory, may "take it or leave it alone"—but as a medical obligation he cannot leave it alone.

If then this problem is to be definitely grasped and dealt with, an approach must be made by way of research and education before prevention and treatment can be rationalized.

The study of mental disease and defectiveness, delinquency and crime has resulted in few startling discoveries, but has produced in late years, upon the foundation of the past, a considerable mass of information concerning the relationship of abnormal behavior to heredity, early training and environment, physical inferiorities and disease. We are coming to realize the dependence of conduct upon a multitude of factors within and without the individual. We are learning roughly to appraise original endowments and to measure the effect of the forces at work in his life, and, upon the basis of these determinations, to outline a rational treatment for the patient, together with prophylaxis for others.

Along with research goes the education of the public and the profession at large. A rapidly increasing literature written for lay consumption attests to the public's hunger for information upon these subjects. People want to know about themselves, their abnormalities and those of their neighbors, and what can be done about it all. The practitioner requires something more than mere common sense in dealing with nervousness, incipient mental disorders, defectiveness and delinquency, but his failure to recognize the extent of the problem and to relate it to medical practice is a decided obstacle to his enlightenment. *Although the dualistic conception of mind and body has been discarded in theory, it still persists in practice.* Too many medical men still view these matters with indifference as the field of a few specialists interested in a rather fruitless and restricted area of semi-metaphysical practice. This regrettable lack of insight must be done away with before they can undertake the work awaiting them.

The courts, the state hospitals, the colonies for the feeble-minded, the correctional schools and prisons all recite very plainly the story of final or semi-final results. Associated with these state agencies for the segregation of abnormal individuals there are, however, some organized activities for the study and prevention of asocial and anti-social conduct. The Institute for Juvenile Research in the Department of Public Welfare, under the direction of the Criminologist, represents the partial accomplishment of a growing plan for the study of juvenile behavior abnormalities. This work, together with the study of convicts and delinquents in this same division, and extensive surveys in grade schools, represents a sincere attempt to grapple with the problem and to train workers in this field.

The work of the State Alienist, together with that of the Psychopathic Institute, up to the present time has for the most part been within the state hospitals for the insane, but with the expectation of a further development, within the near future, of possibilities for research and education. A beginning has been made along these lines in the establishment of a central laboratory for diagnostic and research work, intensive training courses for state hospital physicians, and longer ones in psychiatric nursing for the pupils and graduates of general hospital training schools.

These activities, even though they may be considerably developed and enlarged in the future, do not spell state medicine. They constitute an open door by means of which the physician and indirectly the public may enter into a fertile field to their mutual advantage.

Research into the causes for abnormal behavior and the education of profession and public along these lines must continue on a larger scale than heretofore if the public health is to be conserved.

The state will go on developing policies and methods for group control and care, and the interested and enlightened practitioner sustained by special advice and guidance will come to cope intelligently with individual behavior problems, thus supplying that cooperation without which no public health program can be effective.

30 North Michigan Avenue.

DISCUSSION

Dr. C. C. Ellis, Moline: I open this discussion with no opportunity to prepare myself, but having been associated with the essayist and having worked with the State Department of Public Welfare and with State Department of Public Health, I feel I bring a little experience. Also, I am now engaged in the private work of a practitioner on the outside and see both his viewpoint and the viewpoint of the public. If this paper were analyzed carefully you would see that the doctor covers very important points very rapidly.

In talking of the brain and its organic or functional diseases it is difficult to visualize the organ we are talking about and difficult to relate its anatomy and its physiology. I can best represent it in this way. We know what a complicated mechanism a radio is—all those intricate little parts, each having an important function, sometimes spread out on a board four or five feet long. Now about the organs of the brain. The authorities describe 50 to 60 centers with connecting nerves, all carrying on some more or less interdependent, complicated functions. Now with these instead of being extended we have them folded in and tightly packed in the skull. In doing neurological work and psychiatric work here is the puzzle, to get the various parts visualized out and know their relationship. We have not been able to do it altogether in an anatomical and psyiological sense, but we are beginning to see light.

In speaking of mental diseases and public health problems I think we have to deal with heredity first. Before he comes into being the individual's heredity is in the shaping. There is a problem that cannot be neglected. Then as he enters the world, the obstetrical problem comes up. We are just finding out how many hemorrhages, how many accidents, occur at that time. The point was brought up about a blood test at the moment of birth—another good point. At an early age, scarlet fever, and other infectious metabolic disturbances, dietic errors, are encountered, which may leave traces never recovered from. Then we may step into nervous diseases per se—the child in its relationship with the mother—in its relationship with other children, as the first child, the second child, etc. Its environment, agreeable or disagreeable,—war and peace, enlightenment and ignorance. All these things stressing this childish organism. A little later the glands—puberty and adolescence. Here we find room for adjustment, room for interpretation, and we must have it early or the time is past, the stamp is there, and nothing can be done. At an early age enters the educational problem. The child is pulled over by a machine into a compulsory stamping process. Health has often been neglected as day in and day out this routine impresses itself on this child. I feel that there is a place for religious training for the child, using the emotional, affective spheres of mentality to clinch many homely truths and habits, this religo-educational relation affecting the mind of the child as it has affected the race from its infancy. A properly graduated transition from conventional fable and religious precept to technical scientific truth can be arranged without shock or disillusionment to a harmful degree.

I want to speak in particular in regard to state hospital work. I have a thought that has been impressed upon me since going into private work. The state hospitals have been cramped by lack of funds and the state hospitals' medical association has ceased to function, has fallen into disuse or been abandoned. That society might have been a better contact for state hospital physicians and their patients, the private practitioner and the public if it had been more widely used. There must be some way of getting the facts collected in the work of the state hosiptals back to the public and the private physicians. There is a failure on the part of the physician to interest himself in psychiatry. It seems to be a wish on the part of the physician to not interest himself. One chief reason is that there is no way of making it very remunerative at present. There are problems to be worked out. We have not the facilities for handling mental patients in the general hospitals and in the community. I would like to see the state hospital make more of an effort to place the patient who can secure any help in an outside environment where he could best get along, for the best environment is not always the state hospital itself. I believe that the state hospital should cooperate with the local medical profession in each community in an effort to help them solve as many psychiatric problems as possible in the local, private or public institutions, hospitals, without feeling that they are the sole and only logical means of solving the problem of the mentally afflicted.

Dr. Charles F. Read, Chicago (closing): I have not presented this paper so much from the viewpoint of a state institute man as with the hope of interesting you in this question as a public health problem. Any disorder of the body—and the mind is only a function of the body—that brings six thousand patients into state hospitals yearly, and partially handicaps we do not know how many more in the community, is certainly a matter of public interest, especially to the general practitioner who is too apt, I think, to look upon it as a problem belonging entirely to the specialist and to the state in its role of guardian of defectives and insane. These troubles begin in the home. These mental abnormalities are first observed by some

practitioner, and he should know how to cope with them, should at least be able to recognize what the problem is and cooperate with those who are fitted either to direct him in his treatment of the case or to take it over entirely if that is necessary. The more enlightenment we have, the more of these cases that are treated in the home, the more children we shall save from future trouble.

FUNCTIONS OF THE SKIN AND THEIR RELATION TO GENERAL MEDICINE*

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In many general diseases skin manifestations undeniably play an important part. In the past this was frequently utilized for diagnostic purposes, while the modern conception of disease prefers to rely more particularly on the more exact methods of the laboratory. This seems but reasonable.

The evaluation of changes in the skin, which are less pronounced, require more experience, and even then a classification of the differentiations frequently presents difficulties.

The importance and the value of the *Relation of Changes in the Skin to General Medicine* as a scientific problem is quite another matter. In numerous diseases the corresponding changes in the skin are found with such regularity that a connection between the two is evident even though we do not comprehend the reason and the details. Out of the vast number of well known skin manifestations we refer only (1) to the acute exanthematous infectious diseases; (2) the secondary stage of syphilis with is characteristic skin lesions, directly attributable to the excitant; (3) tuberculosis and pernicious anemia, examples of accompanying skin symptoms of a more secondary nature. Thus the clinical observation of the skin immediately leads to a study of its relation to general medicine.

I. CLINICAL EXPERIENCE

We know that the skin is an organ, perhaps it would be better to say, an organic system, comprising many individual parts which are closely related, and which are subject to a regulatory influence. It is highly probable that this regulation originates in and is exercised by some factors outside the skin. The coordination of the functions of the entire skin is sufficient evidence of such a regulation, a fact which should be kept in mind as being of primary importance.

The knowledge of the physiologic functions of the skin is established beyond doubt; regulation of body temperature, metabolism of the skin, perspiration, are recognized as such. The dependence of these functions upon the involuntary nervous system has been definitely determined. From experience with pilocarpin and atropin we know that the regulation of these functions does not lie within the skin itself, just as the secretion of gastric juices does not depend solely upon the stomach and the secretion of saliva is not influenced merely by the salivary glands, but by the involuntary nerves controlling them. Physiologically, the skin is recognized as an organ with individual functions. A normally functioning skin is prerequisite to normal health. As far as the relation of the skin to general pathology is concerned, we are still somewhat nebulous.

We know that in other organs, for instance, in the bone marrow, there are reserve forces, the same as in any other tissue of the body. The increase of leucocytes produced by the bone marrow in an acute disease cannot be considered as pathologic; it may represent merely an increase of the physiologic action of this organ. The result is a leucocytosis. This disappears, if the body no longer needs it. Leukemia, a tumorlike growth of one certain kind of cells at the expense of another type, manifested by a tremendous production of leucocytes, must be considered a pathologic condition. The question as to whether in case of infection the physiologic function is increased by taking advantage of the reserve forces is immaterial and is in no way connected with the problem as to whether this function merely evidences a healthy store of reserve forces or if it indicates a basic pathologic change. Consideration of the purpose only, and not of the facts themselves, would constitute a violation of the laws of logic. This point of view is important, for conclusions as to any condition of the skin manifestations of disease require treatment. Any increase of function, however, should be encouraged, otherwise, the operation of the normal resources of the body would be curtailed. The following questions

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may cover the problem of the skin and its relation to general medicine:

When does a skin manifestation indicate that the skin itself is sick?

When does a skin manifestation indicate that the skin is engaged in helpful resistance to a body enemy?

This subject is so vast that we shall limit discussion to the role of the skin in general infectious diseases.

The original idea of our studies was conceived from clinic experience; thus also this paper is based upon clinic observations.

Three groups among the general infectious diseases required attention: the first comprises those affections in which the skin is only accidentally involved and in which the skin condition appears metastatically; in this group belong such septic conditions as endocarditis, typhus, infection with pneumococci, streptococci and staphylococci, generally caused by a thrombophlebetic process, and some rare forms of a general gonorrheal disease. The excitants circulate in the blood streaem. An occasional narrow lumen in one of the smaller vessels entails an embolism of bacteria, either in the skin, the lung, the liver, or in some other organ. Here the involvement of the skin is merely passive, no special functions being affected.

One example of a second group is found in the secondary stage of syphilis. Also here skin lesions are caused directly by spirochetes; no like lesions are found in other organs as in the above described septic conditions. In this group of cases a definite and timely limited pathologic condition recurs with absolute regularity, particularly *in* the skin. We are stating the facts; we know nothing of the underlying causes. Nor do we know how many other *so-called* skin diseases are of the same nature. It is highly probable that these also are systemic diseases which at a certain stage of their development are limited partly or entirely to the skin. Surely, a certain relation of the skin to this particular excitant must lead to this affinity. Some authors are of the opinion that the intensity of the skin manifestations, for instance, in the secondary stage of syphilis, is indicative of the prognosis; in other words, it is assumed that the skin in comparison to the intensity of such symptoms gradually develops an immunity to those specific toxins.

To the third group belong the acute exanthematous infections, scarlet fever, measles, variola, etc. In these conditions it has never been possible to determine the presence of excitants in the skin. The epidermis is not the only seat of the disease. In scarlet fever, for example, the bone marrow system is invaded by bacteria (the same as in pneumonia and in typhus), the throat is involved, but the manifestations of the skin are so typical and striking that for hundreds of years it gave the disease its name. That these diseases, as a rule, leave the patient permanently immune to reinfection is another clinical experience several hundred years old. Typhus infections develop immune bodies, nevertheless, the patient is just as liable to contract the disease a second or even a third time. Acute exanthematous infections, therefore, constitute a special group in this particular.

Another point of interest to the subject lies in the following: about 150 years ago Jenner succeeded in preventing the occurrence of smallpox by rubbing the content of a smallpox animal pustule *into the broken skin*. The result was a local infection and then, as a rule, lifelong immunity. A *subdermal* injection of the same vaccine proved to be of no value. It afforded no protection, nor did any symptoms of infection develop. The pustule produced by vaccination cannot be regarded as a manifestation of a pathologic condition only—it is merely evidence of the protective activity of the skin.

To a certain extent these conclusions apply equally to scarlet fever and to measles. We do not know whether the virus enters the skin or not, but we do know that the immunity reaction takes place in diseases with such skin involvements, so-called exanthemata. The skin *may be* the seat of the disease; it *certainly is* the seat of a part of the resistance and the cause of immunity.

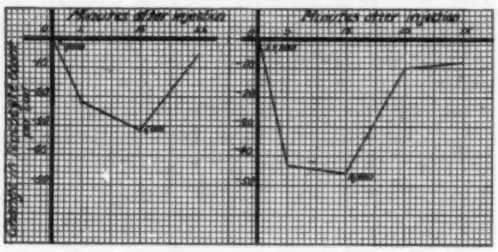
Clinical experiences justify these conclusions.

The skin as a reflection of a systemic disease and the skin as the seat of immunization, are the issues to be determined. Clinical experiences have proved beyond a doubt the basis for these conclusions; but a great many details have to be studied experimentally and settled before further conclusions can be drawn.

II. EXPERIMENTAL STUDIES

Many physiologic functions of the skin are

closely connected with the involuntary nervous system, especially with the vagus, or rather with the entire parasympathetic fibres. Observations of the normal physiologic processes within the body demonstrate this; for instance, small doses of pilocarpin increase perspiration, while small doses of atropin diminish it.



Normal Person. Pneumonia.

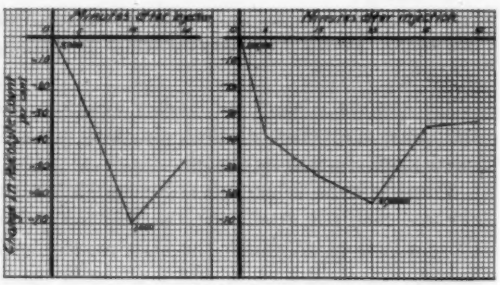
CHART 1.

An observation made in 1918 and but little understood at that time, proved to have far reaching consequences for the studies of the relation of the skin to general medicine. This observation became the starting point of all these recent investigations in this field.

A patient suffering from chronic gonorrhea with a small discharge containing a few leucocytes, mucus and epithelial cells, was given an intradermal injection of a nonspecific, non-tissue irritating protein (Aolan); eighteen to twenty-four hours after the injection a marked increase in excretion was observed. Microscopic study of this excretion showed large numbers of fresh, readily stained leucocytes and greatly resembled the picture presented by a fresh gonorrhea. This reaction was observed in many other like cases by repeating such intradermal injection. Controls were made, and an equal amount of the identical fluid was injected subcutaneously, intramuscularly and intravenously. Nothing happened. The dose had to be increased 50 to 100 times in order to produce a similar reaction via one of the other routes of injection.

This discovery opened a new field of study of the skin. Here was evidence of a relation between the skin and other distant organs, which latter were responsible for the increase of the excretion. As subcutaneous injection proved useless for this purpose, this property, of necessity, proved to be inherent in the skin.

Continued study of the various factors led to a second finding. Intradermal injection of 0.3 cc. of Aolan produces peripheric leukopenia of short duration, both in the healthy and in the sick. For a period of from 20 to 40 minutes the leucocytes decrease to two-thirds to one-half of the original counts.



Pernicious Anemia. Leukemia.

CHART 2.

The above charts 1 and 2 present only some examples of the quoted leucocyte findings after intradermal injections of 0.3 cc. Aolan in the human. The curves show the decrease in the number of leucocytes during a period of 30 to 40 minutes after the injection, given in per cent. of the original count. Absolute numbers will be found additionally at the starting point as well as at the lowest point of the curves. The reaction on the leucocytes is the same in normal persons as in patients suffering from pneumonia (with usually large numbers) or from pernicious anemia (with its continuous marked leukopenia), and even cases of leukemia, with an original count of 154,000 leucocytes, show no exception.

Recent investigations which were conducted in this country have revealed that, due to a reaction of the parasympathetic fibres, the missing leucocytes are detained for a short period in the vessels of the liver and in other vessels controlled by the splanchnic nerve. This finding presents another phenomenon which depends entirely upon the activity of the skin and not upon the solution used for injection. Even the administration of air into the skin is productive of the same results, i. e., leukopenia of short duration. On the other hand, such a reaction cannot be obtained by subcutaneous injection of air or even of proteins.

Another series of examinations from a different angle led to the same results. If Aolan or

saline is injected into the skin, the subcutaneous vessels become dilated and are soon filled with leucocytes, largely of the polymorphonuclear variety. If the identical substance is injected subcutaneously into the immediate vicinity of the vessels, no such reaction is observed; it cannot, therefore, be due to a direct chemical influence, but is to be attributed to some distant influence, acting by way of some connection be-

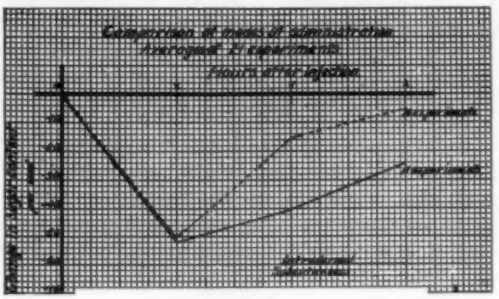


CHART 3.

From experiments by E. F. Mueller, M. D., and H. B. Corbitt to be published in the J. Amer. Pharm. Ass'n., 1925.

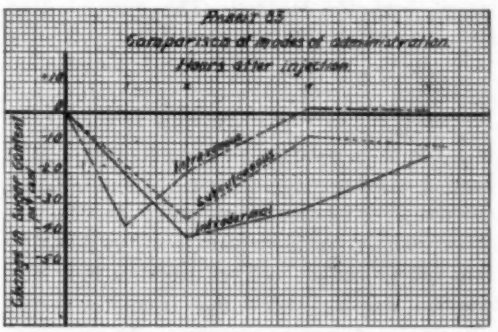
tween the skin and the vessels and involving no influence due to the transfer of a chemical substance. However, this connection may be established, the parasympathetic fibres, dilators of the vessels are in some way affected.

The above described leukopenia of short duration, following intracutaneous injection, is also caused by a vessel's dilation, on this occasion, not in the skin, but in the area of the splanchnic nerve, more particularly in the liver. Both these reactions may be interrupted or prevented by paralyzing the parasympathetic system by means of atropin injections or by nullifying its action by an overstimulation of the sympathetic system with adrenalin. The correctness of these observations was verified in a large series of patients and shows the importance of the parasympathetic system in the production of such far-reaching skin activities. They further show the close relation existing between the skin and the parasympathetic system and also lead one to the conclusion that there exists a connection between the walls of the dilated vessels and the white blood cells, the number of which increases in these dilated parts. The results of these investigations speak for themselves. It was determined that the number of neutrophile leucocytes increased wherever the vessels were found actively dilated. The dilation, near and remote, was caused by the parasympathetic fibres, and in both cases the skin was responsible for this phenomenon.

The following observations may be regarded as proof of the close relation of the skin, not only to the walls of the vessels and the leucocytes, but also to the colloidal state of the serum:

(1) Syphilitic cases of long standing and with a negative Wassermann reaction were induced to give a positive Wassermann reaction, at least for some days or weeks, if injected intradermally with small quantities of a nonspecific protein. (2) Changes were observed both in the sodium chloride and in the phosphorous content, as also in the uric acid of blood and urine after intradermal, but not after subcutaneous injections of like quantities of protein or of physiologic salt solution.

Our most recent investigations have revealed the following interesting facts: animals were given intradermal injections of insulin. The immediate effect was the same as when the subcutaneous route of injection was employed, but the effect of the intradermal injections was



From experiments by Mueller and Corbett to be published in the J. Amer. Pharm. Assn., 1925.

CHART 4.

found to be considerably prolonged, the most striking difference being found in the fourth and sixth hour after administration.

Charts 3 and 4 demonstrate graphically these very unusual results. Chart 3 shows in each of two curves the average of ten tests in animals which were injected with 0.5 units Iletin per kg. body weight. The differences between both curves, representing the results on the blood sugar content after intradermal and subcutaneous injection are evident without further explanation.

Chart 4 shows similar differences in the results

obtained in the same animal representing only one of many examples. The effect of 0.5 units of Iletin on the blood sugar content is very pronounced after intradermal administration, while the subcutaneous and the intravenous injection of a like quantity is gradually less effective.

A few days ago identical results were obtained in human therapy, thus confirming the preliminary animal tests. Here again the involuntary nervous system seems to be the causative factor. As far as we can conclude from our results to date, it is evidently a case of energy transfer by way of nerve fibres, and not a chemical effect produced by discolored substances circulating in the blood stream.

We have submitted but a few examples gathered from the experimental work carried on in the course of the last few years; they are intended to clarify skin properties which were recognized from clinical experiences.

The skin and the diagnosis of local skin reactions is another part of the highly interesting field of study in which Americans have largely been the pioneers. The work of Dick and his collaborators on scarlet fever,—the publications on the diagnosis of asthma—the studies on hyper-sensitiveness to foodstuffs—all involve the skin. The skin merely provides a reflection of certain processes in the body. The time is too short to give details. For instance, the complete relationship between the skin and the asthmatic manifestations is undeniable. The skin reflects these abnormal processes in a local reaction showing a deviation from the normal absorption of various proteins. In asthmatic conditions the individual functions of the skin are involved, very probably by pathologic changes of the entire organism, manifested also by the same deviation from the normal in the lungs in the presence of asthma-causing agents which are not at all irritating in normal persons. The local reaction of the skin, as well as of the mucus membranes of the lungs are merely a reflection which becomes determinable through active interference with the vital processes of the organs. The more that the fundamental idea—the need for considering the skin as an entity—receives consideration, the more the skin reactions will gain in importance for diagnostic purposes.

III. STUDIES ON THERAPEUTIC ACTIVITIES OF THE SKIN

Therapeutically, the activity of the skin may be divided under two headings: 1. direct action, 2. remote action. Diphtheria toxins in vivo, are detoxicated by the skin, in vitro, by macerated sections of the skin. Typhus toxins and typhus bacilli so completely lose their specificity that their intradermal administration does not lead to any production of antibodies, this being a directly opposite result from that following subcutaneous injection. Neufeld recently succeeded in demonstrating the detoxicating influence of the skin in the loss of virulence of highly virulent bacteria when they entered the organism by way of a normal skin. This indicates a direct antibacterial influence of skin tissue without the aid of blood cells. Indirect action, manifested at a distant point, is perhaps even more important; the action of the skin stimulated by purely nonspecific agents in gonorrheal epididymitis affords a good example. The intradermal injection of a non-specific, non-tissue-irritating milk-albumin acts on the symptoms of epididymitis in the course of a few hours. Five to fourteen hours after injection there appears a marked redness at the site of the inflamed area and at the same time a decided increase in uretheral excretion, the latter, as a rule, having disappeared simultaneously with the development of the epididymitis; pain is relieved immediately, and the swelling disappears within a few days.

The reason is as follows: through this intradermal injection (for which Aolan is used) the whole parasympathetic system receives a strong stimulus which quickly reaches the vessels controlled by the splanchnic nerve, and there follows an increase in the number of leucocytes in this area. In all other areas of the body the stimulation is immediately counteracted by the action of the sympathetic fibres; this does not apply to areas of inflammation where the tonus of the sympathetic is abnormally low so that it will not even respond to adrenalin. In this region, therefore, the stimulus which emanates from the skin can become fully effective. The vessels become markedly dilated, and the result is a like reflex increase in the number of leucocytes and thus a stimulation of the natural process of healing without even the smallest particle of the injected substance reaching the site

of inflammation. This constitutes the fundamental importance of the given case. The remote action is due, not to the fluid injected, but rather to the action of the skin as an individual organ which conducted the stimulation by way of the parasympathetic system to a distant point. The remote effects (stimulation) of the skin are here apparent in their most pronounced form and cannot be induced by subcutaneous administration. These effects are additional to the above described direct action of the skin on living bacteria and their toxins, and to its reflection of the body's reactivity by local skin reactions, which are diagnostically important.

I have endeavored to give you a few chapters out of the present experimental work on the skin and its relation to the problems of general medicine which may be summarized as follows:

SUMMARY

1. The skin as an individual organ is closely bound up with the problems of general medicine. Skin functions, as known for centuries, play an important part in physiologic processes such as regulation of body temperature, perspiration, etc. These functions are controlled by the involuntary nervous system.

2. In pathologic conditions the involvement of the skin becomes evident not necessarily because the skin is affected by the causative disease, but because the cutaneous surface as a part of the body has contingently suffered a change in its vital processes. Thus the skin furnishes a reflection of the general pathologic conditions involving the body's metabolism. This reflection is manifested either by visible symptoms or by changes in the skin metabolism which latter may be made visible by introducing certain proteins. This is known as a specific local reaction, and is used for diagnostic purposes in disease of general changes of body metabolism (asthma, hypersensitiveness).

3. Experimental work on the lines of local and far-reaching skin activities has determined: there is (a) a local antibactericidal and antitoxic property of the skin tissue itself; (b) a close relationship to the parasympathetic part of the involuntary nervous system and by this way to the subcutaneous vessels and to the vessels controlled by the splanchnic nerve. Every stimulus from the skin is manifested more or less at the site of those vessels, carrying certain influences to the leucocytes and to the colloidal state of the serum.

4. If areas of inflammation exist in the body, non-specific agents, injected intradermally give rise to a reaction at the site of the infection; this may be used for therapeutic purposes.

5. Certain specific agents (until now only experimentally proved with insulin) are enlarged in their specific action, when administered intradermally.

6. The skin in its entirety, demonstrable hitherto only in some of its properties, represents a part of the body's resistance activity and is therefore to be considered as an independent organ of equal importance to others.

7. The reactivity of the skin to specific mediums is valuable diagnostically. In therapy, the skin is utilizable intradermally, because of its immunizing properties and non-specific agents supply the medium for its stimulation.

THE TREATMENT OF SEPTICEMIAS AND INTOXICATIONS IN INFANTS AND CHILDREN*

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The management and treatment of blood infections and toxemias has been more or less empirical, usually involving, if possible, eradication of the focus, and elimination of the toxemia by the usual routes, viz., skin, bowels and kidneys. We must admit that these measures have not been successful and what patients have recovered following these methods have done so due to their overcoming, themselves, the infection or the toxemia, as the case may be. During the past two or three years various dyes and bacteriacidal solutions (such as Mercurochrome) have been tried, but with indifferent success.

There must be few indeed who would fail to acknowledge our present inability to determine the etiology of disease, but none who would fail to recognize the fact that the causative agent or agents are transferred to their ultimate sphere of activity through the blood, which we know to be a complex nutritive medium, containing, besides the elements of nutrition and stimulators

*Read before the Inter-State Post-Graduate Assembly of America, Milwaukee, Wis., Oct. 27-31, 1924.
**Cuts by courtesy of Wisconsin Medical Journal.

of growth, protective or anti-bodies, and in addition the little understood etiologic factors of disease. Death or recovery may take place through the complete or incomplete ascendency of one of these over the other. Thus, one may readily assume that the tide may be favorably turned by supplying the host with an extra amount of complement or germ combative agents and at the same time removing an equal or

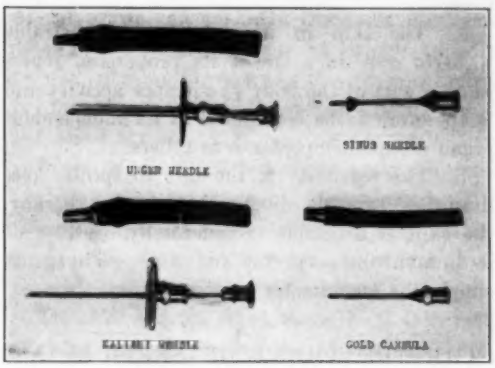

Fig. 1. Instruments.

nearly equal amount of septic or toxic blood, as the case might be. In the majority of instances the toxemia arises from a source which cannot be attacked surgically (for example, the toxemia of acute intestinal intoxication, of septic scarlet, of erysipelas, and of severe superficial burns).

The plan that has been adopted in the Children's Hospital at Toronto was developed and perfected by the late Dr. Bruce Robertson of the surgical staff. The operation is known as "Exsanguination-Transfusion (Bruce, R.)." This observer noted, in France in 1916, the remarkable recovery made by two soldiers from carbon monoxide poisoning treated by bleeding and then a simple transfusion. Robertson felt, following this procedure, that the removal of the altered blood played a large factor in the rapid cure. Following the war he conducted a series of animal experiments which produced most encouraging results. It was, however, soon noted that in order to effect satisfactory results large quantities of blood should be removed before it was replaced with fresh blood. Needless to say, only a certain amount of blood could be removed at once before signs of hemorrhage occurred, so, in order to still further empty the circulation at the same time that blood was removed, fresh material was injected simultaneously. In this manner, therefore, it is feasible to remove a large amount of septic or toxic blood without the patient exhibiting any serious signs of blood depletion.

As the author of this method's experience increased he felt that the more complete the re-

Fig. 2. In young infants.

placement of the patient's blood with fresh nontoxic material was effected, the more dramatic and permanent were the results. Since the author's original description of this method in 1921 there have been approximately 600 such operations for various conditions performed in our clinic.

Technique. We feel that we cannot do better than to quote from Robertson's excellent descrip-

tion of his own method (Arch. of Surgery, July, 1924):

"We have made it a rule, before commencing the operation, to secure a sufficient number of suitable donors to provide considerably more blood for transfusion than the total quantity known to be contained in the patient's body. Unfortunately, the necessity of replacing, all or nearly all, of the patient's blood with blood transfused from donors place a definite limitation on the general application of the method. Obviously it is practically out of the question to accomplish such results in adults. The method has been limited, therefore, with a few exceptions, to children, and usually to children under three or four years of age.

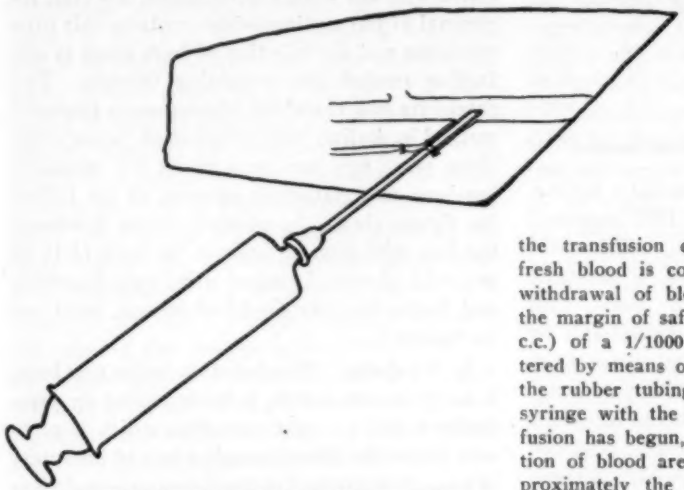

Fig. 3. Entering femoral via saphenous vein..

"The technic of the operation is as follows: blood is withdrawn by puncture of the median basilic vein of the donor or donors into 100 c.c. glass syringes, each of which contains 10 c.c. of freshly prepared 3.5 per cent, sodium citrate solution. As each syringe is filled it is inverted several times to ensure the proper mixing of the contents, and then emptied into a basin. A quantity equal, at least, to the total circulation of the patient is thus obtained. In estimating the amount required we have been accustomed to consider that the quantity of blood in any patient's circulation is roughly 35 c.c. per pound of body weight. The desired amount having been withdrawn, it is laid aside until required at a later stage of the operation. Its temperature is maintained during this time by a water bath, at a temperature of 100 degrees F.

"The recipient is then prepared. The cannula for the transfusion is first tied into a suitable vein, such as the internal saphenous at the ankle, or the medium basilic at the elbow, and 10% glucose solution is slowly introduced to prevent clotting. The exsanguination cannula is then inserted (Fig. 1). In small infants, the superior longitudinal sinus is made use of for the exsanguination (Fig. 2), but in children in whom the anterior fontanelle is closed the femoral vein provides a suitable substitute. The superficial veins are not satisfactory as they cannot be relied upon to yield a rapid and continuous flow of blood. When the femoral vein is used, a large cannula is introduced into it through the saphenous vein, which can readily be picked up just before it perforates the cribriform fascia (Fig. 3). By introducing the cannula in this way, the continuity of the femoral vein is not disturbed, and the risk of injuring the circulation of the limb is avoided.

"Blood is now withdrawn from the patient until signs of exsanguination begin. The amount of blood withdrawn at this stage varies greatly, and depends entirely on the effect on the patient. We have found the amount withdrawn from small children to vary from 60 c.c. to 160 c.c. With the first sign of weakening pulse, one of the 100 c.c. syringes containing citrated blood from the donors is connected with the transfusion cannula, and the introduction of fresh blood is commenced. If it appears that the withdrawal of blood has approached too close to the margin of safety, five to ten minims (0.3 to 0.6 c.c.) of a 1/1000 epinephrin solution are administered by means of a hypodermic needle thrust into the rubber tubing which connects the transfusion syringe with the cannula in the vein. After transfusion has begun, the withdrawal and the introduction of blood are carried on simultaneously at approximately the same rate until all the available blood has been transfused. As a rule, we have introduced rather more blood than was removed, the excess usually being from 100 to 150 c.c., but if, prior to operation, there were cyanosis and other signs of failing circulation, we have made it a practice to withdraw slightly more blood than the total amount injected."

The curative effect of this method of treatment in certain toxemias and septicemias in children has been amply demonstrated clinically and bacteriologically. The results may be considered to have been brought about in two ways: (a) mechanically by removing a large amount of the toxin or bacteria, as the case may be, and (b) serologically by supplying the complement and immune bodies normally present in adult blood. This operation has been performed chiefly in the following conditions: 1. Acute intestinal intoxication. 2. Erysipelas. 3. Septicemia. 4. Septic scarlet fever. 5. Resorcin poisoning. 6. Acidosis. 7. Toxemia of severe burns.

DISCUSSION AND RESULTS OBTAINED IN THE CONDITIONS MENTIONED

1. *Acute Intestinal Intoxication.* Active Causes.

The primary cause of acute intestinal intoxication may be: 1. Production of some toxic substance from the food by decomposition; 2. Improper foods; 3. Infection of the intestinal wall with bacteria; or 4. Abnormal absorption of catabolites from the bowel. Numerous bacterio-

TABLE 1. ACUTE INTESTINAL INTOXICATION

Number of Cases (Male, 63; Female, 42) 105
Cured 58
Died 47
Mortality 44.7%
With ordinary measures of treatment, *mortality was 84%* in a similar series.

AGE INCIDENCE

Age Group	Cases	Cured	Died	Mortality
Under 1 mo.	..	..	..	....
1-2 mos.	2	1	1	50%
2-6 mos.	55	27	28	50.9%
6-12 mos.	32	20	12	37.5%
12-18 mos.	11	7	4	36.3%
18-24 mos.	1	1	..	....
Over 2 yrs.	4	2	2	50%
	105	58	47	44.7%

A reduction of 40% over the usual methods employed.

logical researches have failed to reveal a pathognomonic organism. Mellanby in 1915 suggested the possibility of an amine base, which could readily be formed from histidine, a non-toxic substance, found normally in the bowel. He produced comparable symptoms in animals by injecting the B-iminoazolylethylamine into their gastro-intestinal tract. From our experimental work we consider the cause of acute intestinal intoxication to be a circulating toxin, produced in the mucous membrane of the bowel. Chemically the substance resembles closely an amine base, and possibly is the normal toxic substance found by Starling in bowel mucous membrane. Further work is being done to determine whether the symptoms are due to an overproduction or increased absorption of this substance. Numerous organisms may play a secondary role in producing the poison by converting a harmless protein split product from an acid to a toxic basic substance.

Pathology. There are no characteristic pathological lesions. The commonest, and frequently the only, abnormality seen is a fatty liver. This change was observed in 75 per cent of our cases in the gross. Microscopically it is almost universally present and is lobular in type. The fatty changes were more marked in the very acute cases.

No pathognomonic changes were seen in the bowel. Cases having a history of previous gastro-intestinal upsets presented a catarrhal enteritis in some instances. Circulatory changes, varying from congestion and petechial hemorrhages to actual ulceration were seen, in two cases. These latter changes are those seen in any intoxication caused by proteins, or their split products.

In addition, however, to the above changes there is the condition of dehydration, which means diminished blood flow and a blood concentration. This condition of anhydremia naturally encourages or augments the effect of the toxic substances. A means of directly combating an unknown toxin is difficult. The presence of a circulating toxin which is intimately associated with the blood cells suggests, however, the removal of the medium which contains this toxic substance and the injection of fresh blood to still further combat the remaining toxemia. This procedure was, therefore, adopted as an improved method in dealing with intoxication in our clinic three years ago, and as a result our mortality has been most favorably affected, as the following figures show. In addition to this treatment the free exhibition of fluids in the form of 10-20 per cent glucose by nasal drip, subcutaneously and frequently into the blood stream, must not be neglected.

2. *Erysipelas.* This infection in the new born, i. e., up to one month, is accompanied by practically a 100 per cent mortality, which is probably due to the almost complete lack of immunity in young infants, to the streptococcus hemolyticus which may be recovered from the blood stream in most cases of this disease. As the infant increases in age this ability to produce immunity to this organism is increased so that the mortality with the ordinary methods of treatment in

TABLE 2. ERYSIPELAS

Mortality in Age Groups following treatment by Exsanguination—Transfusion. Hospital for Sick Children, Toronto.

Age Group	Cases	Cured	Died	Mortality
Under 1 mo.	18	8	10	55.5
1-6 mos.	32	27	5	15.6
6-12 mos.	17	16	1	5.8
1-2 yrs.	8	8	..	....
2-6 yrs.	5	5	..	....
Totals	80	64	16	20.0

A reduction in the mortality of the new born, 45%.

the same infection from one month to one year is reduced to 50 per cent. As a matter of interest, we noted the general mortality of 52 consecutive cases that were not transfused to be 28.8 per cent (excluding the new born), and observed that these corresponded with a mortality of 28.3 per cent of 53 cases of a similar series reported by Knox from Baltimore. Comparing these results with Robertson's method of exsanguination, as recorded in the table, leaves little doubt in

one's mind regarding its efficacy in this type of infection. It should be particularly noted that many of these new-born infants that recovered had a hemolytic streptococcus in the blood stream.

3. *Septicemia.* Generalized blood infections in children are fraught with almost 100 per cent mortality and, while Robertson's method had not effected the striking results observed in other conditions, we feel that it has on numerous occasions been effectual in bringing about a cure. Conditions where there exists an irradicable focus of infection which supplies a continual stream of organisms such as in osteomyelitis and septic throats especially, do not offer the same degree of hope for recovery. In contrast to these types of cases one sees excellent results following umbilical infection in the new born, or sepsis neonatorum. In a few instances where a bacterial count in the blood has been made at the beginning of the operation, immediately after there has been a very striking reduction, as is shown in the plates. To still further augment the value of the exsanguination transfusion, we recommend at the conclusion of the injection a full dose of mercurochrome, which procedure at least has a firm theoretical basis. As yet we have not had sufficient experience with this latter procedure to make a definite statement as to the results obtained. The few remarks on the following two cases will serve to illustrate in a very striking manner the recovery of apparently two hopeless cases.

Case 1. S. H., Aged 3 years. Severe chickenpox followed by infestion of several of the poc marks on the abdomen and thigh. The temperature rapidly assumed the septic type and on the second day of the illness there existed a profound toxemia accompanied by almost continuous delirium. The blood culture was positive with a profuse growth of hemolytic streptococci. Three exsanguination transfusions were performed at 1 or 2 day intervals employing between 2000 to 2200 c.c. on each occasion. The child made a prompt and complete recovery. As further evidence of the severity of the infection was the fact that the slough extended down to the muscles and fasciae. It is a matter of interest to note that 111 individuals were grouped (Group III Jansky) in order to supply sufficient blood to the correct group for this patient.

Case 2. B. E., Aged 2 weeks. Premature infant weighing 3 lbs. Umbilical infection with a hemolytic streptococcus in the blood. Septic temperature. Three exsanguinations employing approximately 300 c.c. at each operation. Marked reductions and finally elimination of organisms from the blood as shown in the plates. This child is now two years old and quite normal. This is rather a remarkable case due to the fact that it was (a) premature infant having low resistance, and (b) the small size, i. e., 3 lbs.

4. *Septic Scarlet Fever.* With the advent of Dick's and Dochez's new work in scarlet fever, it scarcely appears necessary to suggest other forms of management in cases of malignant scarlet. Until, however, the anti-scarlet fever serum becomes universally available one must be prepared to meet the emergencies that occasionally arise in this treacherous disease. Experimental work has demonstrated that scarlet fever is a local infection of the throat produced by a toxin producing streptococcus, with rapid absorption of the poison from the point of entry. The mortality in septic scarlet is high and treatment instituted must be prompt if a successful issue is to be fulfilled. We have had four cases of malignant scarlet exsanguinated with complete recovery in all. The results thus speak for themselves. The following case report illustrates in a very striking manner the situation to be met.

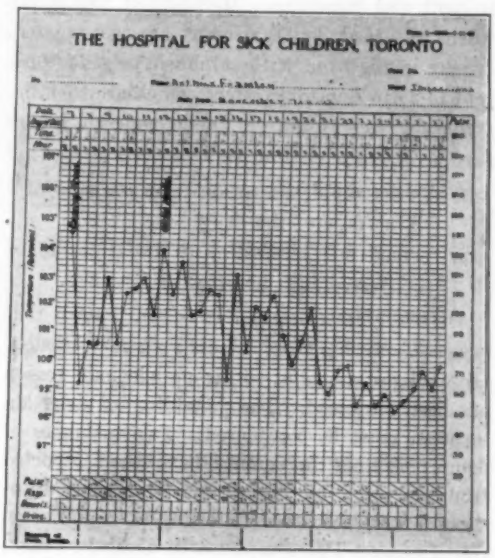

Fig. 4. Temperature chart of a case of septic scarlet fever. Treated by exsanguination-transfusion. Recovery.

Case 3. A. F. Private Patient of the author's and cited by B. R. in Arch. of Surgery, July, 1924, IX, 13. A. F. aged 13 years, twenty-four hours before admission became suddenly ill with fever, delirium, vomiting and cyanosis. On admission, the patient was delirious, the temperature was 104 degrees, the palate was intensely congested with punctate

hemorrhage scattered over it, the tonsils were much swollen, the tongue coated showing definite small scattered pink papules, with slight erythema about the axillae, while the cervical glands were much enlarged. Tentative diagnosis: Acute septic scarlet fever (this was confirmed at a later date by the appearance of desquamation). Exsanguinated 500 c.c. transfused 625 c.c. on admission. Rapid fall in temperature and improvement in general condition followed. The temperature subsequently rose and the patient ran through the ordinary course of scarlet fever complicated by otitis media. In this case, the operation apparently relieved the patient of the toxemia which overwhelmed him at the onset of the disease. The blood culture was negative. Recovery followed.

6. *Drug Poisoning.* Preparations containing resorcin and tar are very frequently employed in the treatment of infantile eczema with most gratifying results, but both of these drugs are not free of toxic substances and consequently are not without danger in their employment. Both belong to the phenolic group of substances and are closely related to carbolic acid. Their action is somewhat similar to that of carbolic, but less irritant and poisonous. Members of this group when absorbed by the body are conjugated, largely in the liver, with sulphuric or glucuronic acid to form non-toxic esters, which are then excreted by the kidneys. Their mode of action may be considered from three aspects:

1. A very rapid absorption from the skin of a large dose of the drug.
2. A moderate absorption with failure to be converted into non-toxic substances.

3. *Drug Idiosyncrasy.* It is well known that patients suffering from infantile eczema occasionally collapse and die; so far no adequate reason has been advanced. The possibility of drug absorption must be considered. Two instances of drug poisoning in eczema have been reported from our clinic by Tisdall and Graham; both of these infants recovered following exsanguination transfusion. The symptoms in these two cases appeared in a few hours after the application of 4 per cent resorcin ointment to a raw surface, consisted of an ashen gray color promptly followed by weak pulse and collapse. In each instance prompt recovery followed the removal of the toxic blood with injection of fresh non-toxic adult blood. Carboluria was present in each case. The application of the Robertson treatment to these two cases naturally suggests its use in all cases of drug poisoning where alterations in the blood and liver occur following absorption.

7. *Toxemia of Severe Burns.* It was the high mortality in this condition that primarily led Robertson to investigate the cause of burn toxemia and if possible to find suitable treatment. Deaths from burns in children result from two causes: (a) Primary shock, which is comparable to ordinary traumatic shock, and (b) toxic shock, which is the result of absorption of certain toxins produced in the burned area. In primary shock, little can be done to relieve the condition, while a great reduction in the mortality of toxic shock has resulted following the observations made by Robertson.

TABLE 8. BURNS

Number of Cases	53
Cured	29
Died	24
Mortality	45.2%

Age Group	Cases	Cured	Died	Mortality
Under 6 mos.	1	..	1	25%
6-12 mos.	3	3	..	25%
12-18 mos.	9	6	3	47.8%
18-24 mos.	14	6	8	47.8%
2-4 yrs.	17	12	5	29%
4-6 yrs.	4	2	2	....
Over 6 yrs.	5	..	5	....
	53	29	24	45.2%

A reduction in mortality of 55%.

In a considerable number of cases there is only mild primary shock and then follows an interval in which the patient appears to be in good condition, in fact this apparent good condition is frequently out of all proportion to the extent of the burn. Usually at the conclusion of 24 to 48 hours the temperature rises and symptoms of toxemia develop. The child becomes drowsy, the circulation depressed and the pulse rapid. In the cases that go on to recovery both the temperature and toxemia begin to subside about the fifty day, after which the problem is that of local treatment of the burned area. In the severe cases both the temperature (106°) and toxemia rapidly increase and vomiting supervenes. The pulse becomes more rapid and weak and the patient taxes on a dusky hue, an indication of capillary stases. The final stage is convulsions, after one or two of which the patient dies.

From a critical study of many burned cases it was found that there was an increase of non-protein nitrogen in the blood which is probably due to the tissue destruction, while from a purely clinical aspect Robertson concluded that the

burned tissues were responsible for the toxin which is taken up by the blood. The appearance of these symptoms of toxemia 24-36 hours following the burn probably indicate that the damaged tissue must be in contact with living tissue before a toxic substance can be manufactured.

The nature of the toxin is not definitely known but from the clinical symptom it appears closely allied to the toxins produced in secondary wound shock and in intussusception as a result of burning living tissues. The toxin is most highly concentrated in solutions of corpuscles suitably treated and to a lesser extent is present in the blod serum. Boyd's further work showed that this toxin consists of primary and secondary proteoses and like snake venom, it is made up of two portions, a necrotoxic and a neurotoxic. The former is not destroyed by heat and is diffusible; the latter is thermolobile and colloidal. There was no evidence of antitoxin production in the blood although other

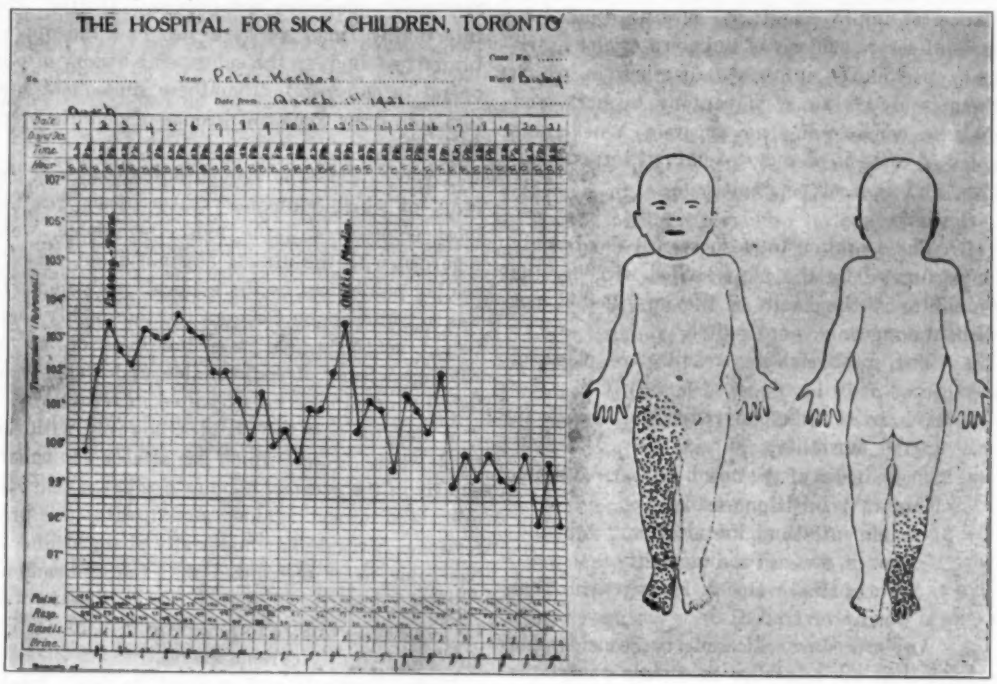

Fig. 5. Temperature chart and drawing of a severe scald with intense toxemia, treated by exsanguination transfusion which was followed by recovery.

(Robertson). It differs however from these toxins in that it causes convulsions. From experimental work conducted by Gladys Boyd in our laboratories it was found that there is a substance produced in burned tissues (in larger quantities in extensive skin burns than in those of other tissues) which circulates in the blood, either in, or closely absorbed to, the red blood cells and which causes the symptoms of toxic shock and in some cases death. The toxic material is produced in increasing amounts following the burning of the tissue until from 24 to 36 hours after the injury. It is produced only observers have reported having observed some anti-body production.

With this short discussion of burn toxemia one may readily realize the obstacle to encounter in dealing with this condition. From the hospital records we noted no recoveries in any child following a convulsion under the ordinary methods of treatment, while with exsanguination transfusion the general mortality has been reduced to 45%.

Case 4. P. K., aged 13 months, was admitted two hours after a severe first, second and third degree scald of the extent indicated in the diagram. A severe

toxemia developed twelve hours after admission, and the child had several severe convulsions. The pulse rose to 160 and became very weak. The child was drowsy, toxic and cyanosed. Exsanguinated 300 c.c. and transfused 400 c.c. twenty-four hours after admission. One convulsion following transfusion. There was steady improvement following the transfusion, interrupted only by an elevation of temperature due to otitis media.

Miscellaneous. The method of exsanguination has been used in other conditions not previously stated in which there appeared to exist a form of unknown toxemia and in which all previous methods of treatment were unsuccessful. Instances of improvement and cure were noted in cases of severe acidosis of unknown etiology, primary peritonitis, infectious diarrhea in which there is always an accompanying toxemia, and diabetic coma, while no apparent benefit was noted in cases of uremia, toxemia of intussusception, and general peritonitis.

Remarks.

1. The operation to be successful should only be performed by the most skilled surgeon, the procedure in the hands of the unskilled is not without danger.

2. The most striking results are obtained in—

   1. burn toxemia. A reduction of 55% in the mortality.
   2. erysipelas of the new born. A reduction of 45% in the mortality.
   3. acute intestinal intoxication. A reduction of 40% in the mortality.
   4. Septicemia. (to a lesser extent but worthy of trial).

3. Any procedure which effects a considerable reduction in the mortality in certain conditions is worthy of trial.

RECLAIMING HOPELESS CHEST CASES*

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Two years ago, at the annual meeting of this Society at Decatur, in a paper devoted to the general considerations of the "Indications and Technique for Major Chest Surgery," we presented the first of our series of operations for the purpose of relieving otherwise hopeless pulmonary disease and, in 1924, at the meeting at Springfield, we presented additional cases in the discussion of a paper on "The Changing Attitude in the Treatment of Pulmonary Tuberculosis" given by Dr. Palmer before the section on medicine.

During the past year, there has been manifested an increasing interest in the possibilities of chest surgery for the relief of advanced pulmonary disease on the part of both physicians and surgeons and during that period our series of operative cases has grown to a point where we feel that we are justified in reaching some reasonably definite conclusions. During the intervening time, we have also had the opportunity to follow up the subsequent history of our operative cases and, from these subsequent histories, to draw some conclusions of definite practical value.

A generation or so ago, chronic diseases of the lung, of which pulmonary tuberculosis was the most common and the most formidable, were regarded with the utmost pessimism not only by the lay public, but by the medical profession. It was not uncommon for even the thoroughly competent physician to raise the question as to whether a case of indisputable and well established consumption ever resulted in recovery.

Within the past two decades, however, with the tremendous interest which has attached to tuberculosis in the greatest popular campaign that has ever been waged against any disease, the professional attitude has materially changed and it has come to be recognized that the tremendous fatality formerly attributed to the disease was largely due to failure to recognize it in its earlier and more readily curable stages.

Early diagnosis and modern hygienic treatment, in which rest out-measures all other factors in importance, have led to the recovery of countless thousands until, the last few years, it has become a sort of axiom that tuberculosis is a distinctly curable disease provided diagnosis is made and treatment begun during the early stages and carried out properly over a sufficient length of time. In other words, it has come to be accepted that cure of tuberculosis depends on diagnosis made early enough and complete physical rest and treatment continued long enough.

While this statement is not entirely correct—while there are certain types of pulmonary tuberculosis which are hopeless however early the

*Presented before the Section of Surgery of the Illinois State Medical Society, Quincy, May 19-21, 1925.

diagnosis or whatever the method of treatment—accent is still placed upon early diagnosis as the big factor in cure.

On this account, many of the scores of sanatoria which have developed during the past ten or fifteen years have confined their attention to early or moderately advanced cases, closing their doors upon those in the more advanced stages of the disease and relegating them to the ranks of the hopeless and the incurable. More than one competent authority has been quoted to the effect that, while we have made enormous strides during the past few years, while the mortality from tuberculosis has been reduced fully fifty per cent and while the earlier cases are curable, we are as helpless as we have always been when confronted with far advanced active pulmonary disease.

It is for the purpose of correcting this widely spread impression and for the purpose of directing attention to the more promising picture for advanced consumptives through conservative but timely interference that we offer the following remarks and conclusions.

As previously intimated, the most important factor in the treatment of pulmonary tuberculosis, as is true in most inflammatory conditions, is absolute and complete rest. If we are dealing with a peritonitis surgical procedure indicates the complete rest of the abdominal organs which we would probably bring about by opiates and withdrawal of fluids by mouth. In active pulmonary tuberculosis, we are dealing with an inflamed or ulcerated lung, but unfortunately, as is true with the heart, it is impossible to place the lung at absolute rest. For the maintenance of life, it is essential that the patient should continue to breathe. To bring about as complete rest as possible however, the modern hygienic treatment of tuberculosis requires complete rest in bed over periods of months or years together with complete mental and nervous rest attained through peaceful environment and protection of the patient from worry, anxiety or even immoderate amusement and entertainment. The object to be attained is to reduce the respirations to the smallest possible number and to make them as shallow as possible—a condition of definite localized rest. It is to attain this end, and incidentally other ends of lesser importance, that modern successful chest surgery has attained its first victories.

A great many years ago there was introduced an operative procedure known as artificial pneumothorax in which the affected lung is collapsed by introducing air into the pleural space of the affected side. You will recall that the pleura of one side constitutes a complete bag, one side of which is adherent to the chest wall and the other adherent to the lung. The introduction of air into this pleural space gradually expels the air from the lung which is finally firmly collapsed. The affected lung is thus placed in what may be regarded as an air splint, the pressure of which may be regulated by the addition of air from time to time.

Aside from the relatively complete rest given to the affected lung, in this way great benefit is also attained through the fact that the air pressure squeezes out of the lung the poisonous pus and caseous material which is responsible for the fever and other symptoms of tuberculous disease.

This operation experienced various vicissitudes and underwent periods of changing popularity, but today is accepted as a distinct part of the modern treatment of pulmonary tuberculosis.

Unfortunately, artificial pneumothorax or lung collapse is applicable to only a certain percentage of cases. It cannot be employed when both lungs are seriously diseased and it is likewise impossible when the two layers of the pleura are adherent through previous attacks of pleurisy. It has long been recognized by conscientious clinicians that artificial pneumothorax has given a new lease on life to thousands of patients who must otherwise have succumbed, but it has also been recognized that there are thousands more for whom the procedure is impracticable.

In those cases with marked unilateral involvement in which adhesions render lung collapse impossible, there has been suggested an operation known as extra-pleural thorocoplasty or the collapse of the affected lung by the removal of considerable sections of the ribs, reducing the diameter and capacity of the thorax on that side.

The removal of sections of the ribs not only produces a lessened anterior posterior dimension and reduces the lateral diameter and permits the raising of the diaphragm. These three factors give a splendid collapse.

It is not my intention at this time to go into the surgical technique of thorocoplasty; but rather to offer the practical deductions which have come from our experience of the past two

years and, as a result of these deductions to urge, not only upon surgeons and internists extensively engaged in tuberculosis work; but upon the rank and file of physicians the advantages to be gained from the employment of chest surgery in properly selected cases and the great advantage of employing lung compression, either by artificial pneumothorax or thorocoplasty, much earlier than these procedures have been used in the past.

At the time of presenting the first of our series of cases before this Society, in 1923, we shared more or less the general impression of the extreme danger in the operation on these cases; but increased experience tended to allay our apprehension so that we were quite ready to concur in the conclusions of Alexander, published in the *American Journal of Medical Sciences* during 1924, that the operative mortality should not exceed 2 per cent and that, with proper selection of cases and intelligent after-care, there should be a complete recovery of at least one-third of our cases even when dealing with the far advanced apparently hopeless individuals. In fact, we have come to feel that, even with these very critical cases, the mortality of 12 per cent during the first month after operation, cited by Alexander after a critical study of 1,024 cases operated in the United States and abroad between 1918 and 1923, is much higher than need be anticipated with the employment of our present methods.

The extremely interesting and practical conclusion derived from our later experience, however. is that, for the most part, our failures in results in obtaining a complete cure after thorocoplasty, lie in the failure of the heart, the majority of patients, after complete cessation of pulmonary activity, succumbing to myocarditis.

It will be borne in mind that, in the past, thorocoplasty and even artificial pneumothorax, have been regarded as remedies of last resort. In a large majority of sanatoria, patients with unilateral tuberculosis, even with marked activity and softening of the affected side, are kept at complete bed rest over many months until the clinical picture has become quite discouraging and it is apparent that something must be done to satisfy the disheartened patient and family. During these intervening months, often running into years, there may have occurred repeated pleurisies, with the formation of dense adhesions, rendering compression by artificial pneumothorax impossible when it is finally undertaken. Even with the failure of artificial pneumothorax, and with the patient steadily losing ground, surgical interference is usually delayed until the case is in every way desperate and is then undertaken under the impression that death is inevitable without it. Under these conditions, it is surprising that the results of thorocoplasty are as brilliant as they are.

During the months or even years, in which the disease is steadily progressing, the patient is kept at complete rest with resultant flabbiness of all of the muscles including the heart and, at the same time, the individual is subjected to grave and continuous toxemia contributing to the cardiac inefficiency. As a result, the patient is finally presented for operation, a complete physical bankrupt aside from his pulmonary condition, and with a heart which is already showing ominous signs of failure.

It is not our contention that either artificial pneumothorax nor surgical interference should be advocated in that large percentage of cases in which rest in bed and sanatorium routine result in definite and appreciable improvement; but it is our belief that thousands of human lives are unnecessarily sacrificed by delaying lung compression of one kind or another, in the face of a losing fight and continued unilateral softening, as is done at the present time.

In other words, it is our present belief that lung compression by artificial pneumothorax should be undertaken in all cases of active, unilateral pulmonary tuberculosis, (in which definite contra-indications do not exist), as soon as it is demonstrated that activity increases or is undiminished after the employment of the conventional hygienic treatment over a moderate length of time; and it is our further belief that, when artificial pneumothorax is proven impracticable or impossible through pleural adhesion, thorocoplasty should be given immediate serious consideration. We are satisfied that, through such a program, with an operation which need not have much higher fatality in experienced hands than an appendectomy, the percentage of complete cures will be tremendously increased and the mortality, subsequently occurring on account of heart failure, may be largely obviated. In the words of Alexander, "In suitable cases the operation should be performed as soon as artificial

pneumothorax has proven itself ineffective; procrastination may rob these patients of an excellent chance of complete cure."

Unfortunately, forehandedness and prevention of disaster are not applicable to the great army of neglected consumptives who are already with us. For this large group of patients, otherwise hopelessly incurable, surgical interference offers the one remaining chance and, in conclusion, I should like to suggest that, in the light of our present knowledge, it is unforgivable to relegate to the ranks of the incurable any tuberculous patient, however advanced his condition may be, without at least giving consideration to what hope may be offered through the joint offices of the internist, familiar with thoracic conditions, and the surgeon.

While tuberculous infections are responsible for most major chest surgery and is done generally on the chest wall occasionally conditions, such as foreign bodies, lung abscesses, or tumors within the chest wall require an extensive amount of surgery done within the chest and it is upon this phase that I want very briefly to draw your attention, discontinuing from this point all conditions attributable to tuberculosis. In this class of cases in the past we have hesitated on account of the extreme hazard in entering the thoracic cavity in any major surgical procedure. The impression is largely dissipated in our own experience when the chest is entered with the full and intelligent conception of the anatomic and physiologic conditions to be encountered.

These operations as described many years ago have been performed with various modifications by numerous surgeons, but have always been fraught with the utmost danger on account of the changes in pressure on entering the thorax tending to embarrass the circulation to an extent which is exceedingly serious in the presence of pre-existing diseases of the heart or of the larger vessels. Failure to safeguard the patient against these sudden changes had led to the great majority of failures and disasters in thoracic surgery of the past. Sudden death on the operating table, gradual failure from valvular pneumothorax, embolism and suffocation have been noted with far too great frequency, while not infrequent deaths from causes little understood in the past have been ascribed to a vague and indefinite thing known as pleural shock.

These disturbances are distinctly due to sudden changes in pressure and not to a restriction of the respiratory function as has been believed in the past, for it is recognized that the body is supplied with excess lung capacity and that considerably more than half of it may be destroyed with little or no disturbance. One lung is sufficient to ordinary life and work and half of one lung will support life in comparative comfort.

To overcome these changes in the past, there have been devised elaborate and complicated methods of operating on these cases under artificial conditions, all of which have proven relatively unsatisfactory.

In our experience we have found that the preliminary collapse of the lung by artificial pneumothorax will pave the way for a circulatory balance under changed conditions of pressure, eliminating so-called pleural shock and other threatening conditions.

Whenever it has been in any way possible, we have brought about a complete or partial lung collapse and in the after-care of the patient we have endeavored to maintain constant pressure on the side operated on, thereby reducing the chance of hemorrhage and of the accumulation of post-operative fluid as well as preventing the more serious circulatory and pressure phenomenon.

With preliminary lung compression which I believe is original with us and with certain modificatons in operative technique, our own experience not only in extrapleural thorocoplasty, but in other major operations of the chest give decided color to the prophecy that chest surgery will become one of the very interesting and relatively safe fields of surgical endeavor during the next decade or two.

DR. H. H. COLE, Springfield: There are two or three little points that I think should be emphasized. This operation of producing localized rest goes back about a century and a half as far as we can determine and it can be gotten at in a number of ways. When you come down to the last analysis rest in bed is the easiest means of producing it. It has been determined by a number of observers that in tuberculous individuals reducing the respiration down to 8 or 10 per minute has proved a distinct advantage. We have had two or three patients who could reduce their respirations regularly over an hour or two at a time three or four times a day. That work has not gone very far and I am not prepared to give any conclusion.

Then we got the idea of using sand bags and that is also a very old method of producing localized rest in the lung. I think after all the value of the old ice

bag treatment of tuberculosis did the same thing. Then we come to the idea of strapping the chest to produce a more or less unilateral reduction in breathing such as is now done for pleurisy. A little later there was brought out the operation of cutting or pinching the phrenic nerve to allow the diaphragm to rise on this side, producing localized unilateral rest. It gives about 40 per cent reduction of movement and therefore considerable less lung volume. Then comes artificial pneumothorax. This was done in England about a century ago for hemorrhage and it is still being done for this condition. During the last ten years artificial pneumothorax has been used for direct treatment without regard to hemorrhage in unilateral cases. We have found that in 50 per cent of the cases where artificial pneumothorax was tried that adhesions inside the chest prevented the proper use of the gas. Bilateral pneumothorax gives some relief but there is in a sense more danger of tearing adhesions and producing trouble in the lung.

Then thoracoplasty was brought out and it has had a rather stormy course up and down. They tried the localized operation, that is, cutting a window over the cavity and replanting fat beneath the pleural space. Finally Sauerbruch brought the operation up to the point where it is being used today. A number of operations have been devised but cutting at the angle of the rib is the key to the situation. If you cut the rib at the posterior angle the entire chest wall will fall because the angle of the ribs controls the whole. We take out in the beginning about five or six sections of the lower ribs posteriorly down to the eleventh about two to four inches of each rib at the first sitting. Then two or three weeks later as the patient improves we go in and take out the remaining sections to the apex. If you take out the upper first and leave in the lower, then the patient is breathing with the lower part of the chest and what he does is to suck the pus out of the cavity and into a bronchus and then back into the lung and he gets a pneumonia. If it is a basal cavity the apex should be immobilized first, if it is the hilus the base should first be immobilized. Now we collapse the lower half of the chest up to about the fifth rib and then at the second sitting we go in and get a beautiful collapse. I do not think it is as complete as pneumothorax but in the collected cases reported by Alexander they obtained 30 per cent cures over five years. Our series is too young so we are not sure but it has a much wider field of usefulness. An important point is the removal of a section of the first rib. If this is neglected a large factor in cure is lost.

DR. DON DEAL, Springfield (closing the discussion): I want to go over one point. There is no such thing as pleural shock; symptoms are produced by the sudden change of pressure. If you do a preliminary pneumothorax there is no shock resulting from opening the chest. The operation done here has a very low mortality rate and is done in two stages. It is not necessary to remove a great extent of ribs. The compression is not limited by the two ends of ribs coming together.

PROGRESS IN THORACIC SURGERY*

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Infection and new growths constitute the greater proportion of disease conditions amenable to surgical treatment. The thorax is perhaps as frequently the seat of such lesions as any other region of the body, but the surgical treatment of its lesions remains relatively undeveloped. The reason lies very largely in the fact that there are special problems in thoracic surgery which differ fundamentally from those of other parts. Antisepsis and anesthesia were the basic requirements for the development of surgery in general and of abdominal surgery in particular. The special problems in thoracic surgery are inherent to its structural and functional relationships. The thoracic organs are encompassed by a bony framework which makes them relatively inaccessible. The thorax, in addition to containing the great vessels and important nerves, is the seat of two of the three vital organs which constitute "the tripod of life." Many of the organs of the body may be entirely dispensed with. The function of the gastro-intestinal tract may be suspended for days, but to interfere with the heart or lungs even momentarily threatens life. The diagnostic difficulties are often great and the exploratory operation for the purposes of diagnosis as compared with its use in abdominal surgery is of very limited application. The technical problems involved in such operations as drainage of mediastinal or pericardial suppuration, or resection of the lung or esophagus are baffling, and special procedures involving the use of differential pressure anesthesia or the endoscope, require expert knowledge and skill. Thoracic disease frequently reduces the patient to such a critical condition as to preclude an operation of any magnitude and in a large proportion of chronic cases the patient presents himself for surgical treatment after irreparable damage has been done. Partly due to these inherent difficulties of thoracic surgery and partly because of the absorbing interest in the less difficult, more rapidly developing and more remunerative fields there was a general apathy with respect

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to thoracic surgery until the urgency of the Great War and of the streptococcus pandemic compelled consideration of its problems. The interest and impetus to the development of thoracic surgery so aroused has been largely sustained.

Even though the development of thoracic surgery has been slow, real progress has been made. Even a brief and fragmentary review of advance along fundamental lines, as well as in the treatment of specific conditions substantiates this statement. We have begun to realize the importance of prevention and of early diagnosis and efficient treatment. We have added to our knowledge of pathology of the earlier stages of disease processes during which it is still amenable to surgical treatment and we have learned to better correlate symptoms and pathology. We have established certain fundamental principles for our guidance in treatment. We are learning to appreciate the value of pre-operative preparation of the patient, such as rest, diet, postural drainage, and antiseptic solution irrigation; of the vital capacity test as a measure of the patient's condition as an operative risk and as a criterion of the results of operation. A clearer differentiation of pathological condition makes possible a better selection of operative treatment. Necropsy findings following unexpected fatalities have brought home to us the important fact that a chronic process may have damaged vital organs, particularly the heart and kidneys, far beyond any clinical manifestations of such damage and has brought home to us the realization of the safeguard of a several stage operation.

Among methods of treatment that have developed may be mentioned regional and differential pressure anesthesia, artificial pneumo-thorax collapse of the lung, phrenicotomy, extrapleural thoracoplasty, posterior extrapleural mediastinostomy, the combined thoraco-abdominal pericardiotomy and lobectomy. The military surgery of the great war brought out important methods for localization and extraction of foreign bodies in the lung, the closed method and antiseptic solution irrigation of empyema, the prevention and treatment of hemothorax, the value of combined thoraco-abdominal approach in cases of injury in the region of the diaphragm, and emphasized the extraordinary resistance to pneumothorax of healthy young individuals as contrasted with the appalling fatality that followe d pneumothorax incident to the small opening for drainage of an acute streptococcus empyema in the case of critically ill toxemic patients.

A brief review of present methods of treatment of the commoner thoracic disease conditions and results obtained affords specific examples of progress.

Empyema: Up to a few years ago the prevailing conception regarding the treatment of empyema could be summed up in the simple formula "rib resection and drainage." The forbidding mortality following this treatment during the streptococcus epidemic rudely shattered this complacent conception. We now recognize that early in the acute streptococcus empyema rib resection and open drainage is absolutely unjustifiable. Repeated aspiration or the closed method of drainage only are permissible in the early stages.

By the same token the closed method of drainage is indicated in a critically ill patient suffering from any type of acute empyema, particularly in its incipient stage. This operation performed under local anesthesia on the patient undisturbed in his own bed, replacing a portion of the pus aspired with normal saline or Dakin's solution, will tide over the crisis in case of patients that would not survive the ordeal of being transported to the operating room, general anesthesia, the sudden evacuation of pus and open pneumothorax. In any case of acute empyema except in the presence of a large bronchial fistula, the closed method of drainage combined with antiseptic solution irrigation, in my experience, has yielded better results than the open operation. If efficient irrigation cannot be arranged for at regular intervals of about every two hours during the day, and two or three times at night the open method of drainage combined with such irrigation as can be arranged for is preferable.

In chronic empyema we have arrived at a much clearer understanding of causation and prevention, a fuller knowledge of pathology and better methods of treatment. In a series of three hundred and ten cases at the Mayo Clinic, late diagnosis, from three months to ten years after the onset of symptoms, was the chief cause

of chronicity in 23 per cent. Inadequate drainage usually with respect to the length of time drainage was kept up was the chief cause in more than fifty per cent. Drainage must be kept up as long as a cavity persists and pus forms. The fact that the drainage opening has healed is in no sense an indication of healing of the empyema cavity. In many such cases the cavity will persist for months or years before the pus breaks through the chest wall or into a bronchus. Foreign bodies in the cavity and fixation and fibrosis of the lung are other causes of chronicity. In a small group of cases empyema will recur after years of complete healing. Such recurrence is due to a persistent infection in the thickened pleura or the recurrence of a healed bronchial fistula. In such cases thorough excision of the thickened pleura or obliteration of the bronchial fistula is necessary to a permanent cure.

Greatly improved results in the treatment of chronic empyema both as to conservation of structure and function as well as a much lowered mortality has followed the preliminary antiseptic solution irrigation and the several stage operation. By a combination of these methods, large cavities of long standing have been reduced from fifty to ninety-five per cent in capacity, thereby greatly conserving structure and function, and the mortality following operation for large cavities that have persisted has been reduced to under two per cent. This low mortality includes cases with tuberculosis, and those with extensive secondary damage to vital organs from the prolonged suppuration.

Tuberculosis empyemas are more common than is generally recognized, comprising fifteen to twenty per cent of the cases that I observed at the Mayo Clinic. Open drainage does great harm to patients with a sterile tuberculous exudate whether serous or purulent, because of the secondary infection that invariably follows. Drainage alone never results in healing and the secondary infection increases greatly the difficulties of further treatment. In any case of suspected empyema giving a history of a preced- idiopathic pleurisy with effusion, of so-called "primary empyema," or in which there are other evidences of tuberculosis, the exudate should be aspirated and cultured. If the exudate proves to be sterile open drainage should not be instituted. The exudate may be aspirated repeatedly to relieve mechanical embarrassment and if the exudate persistently recurs an extrapleural thoracoplasty should be done for the collapse of the cavity.

Most cases of chronic tuberculous empyema which I have observed have had the misfortune to have been drained and so secondarily infected. In such cases preliminary irrigation with saline solution, if the pleurae are not thickened or with Dakin's, or other antiseptic solution if they are thickened, followed by a several stage plastic operation, will result in a cure in practically all cases, except those with an active progressive tubercular lesion. In cases with very large cavity and complete lung collapse I have performed first a several stage extrapleural collapse and later a resection of as much of the parietal pleura as necessary to secure complete healing.

Pulmonary suppuration: Pulmonary suppuration includes abscess and bronchiectasis and the combined lesions of abscess and bronchiectasis. Progress has been made in the studies of prevention, etiology, pathology, and in the better correlation of symptoms and lesion, resulting in the selection of operation more suited to the pathology present. In acute abscess expectant treatment, including bronchoscopic lavage, pneumothorax collapse, drainage, lobectomy and cautery extirpation, are advocated. Each has its indication but no one form of treatment is suitable to all. Expectant treatmeat including bronchoscopic lavage and pneumothorax collapse is indicated in cases of centrally located abscess. In these cases the nearest exit for the pus is through a large bronchus. Drainage through the chest wall is difficult and the danger of hemorrhage is great. This is the type of abscess that most frequently progresses to a spontaneous cure. In case of peripherally situated abscess a spontaneous cure may result and such cases should be treated expectantly if the symptoms and constitutional reaction is mild and the patient is improving. If there is no definite improvement during the period of a few weeks, or if the sputum is profuse and foul, and the patient is acutely ill and losing ground, drainage should be instituted at once. The nearest exit for the pus in peripherally situated abscess is through the chest wall.

Drainage through the bronchus is in the great majority of cases so incomplete that chronicity rather than healing results from prolonged expectant treatment. Bronchoscopic lavage in these cases is illogical, and pneumothorax collapse is often impossible on account of adhesions. If collapse is possible and is brought about, there is risk of perforation of the abscess into the pleural cavity and a resulting empyema which is always a serious complication.

In case pleural adhesions are present drainage is instituted by a single stage operation, following accurate localization of the pus with the aspirating needle. If adhesions are absent, incomplete, or in case of doubt as to the presence of adhesions, a two stage operation affords the greatest protection against infection of the pleural cavity and should be carried out unless the drainage is so urgent that the risk of empyema becomes the lesser evil. Accurate localization of the abscess and a sufficiently large window over it to allow suturing of the lung to the parietal pleura around the abscess are important to successful treatment. In order to lessen pain and to steady the chest wall so that the patient can evacuate the purulent sputum, the ribs are not resected at the first stage operation, but left in place as splints until the second operation. Suturing the lung around and under the ribs denuded of periosteum is readily performed. The abscess should be explored for secondary pockets and the drainage opening kept patent until the abscess has healed.

In chronic abscess further expectant or palliative treatment is obviously contraindicated. In these cases drainage operation should be the first step in treatment. If a well defined cavity is present, improvement will always follow drainage and a residual persistent cavity can be later obliterated by a plastic operation.

In some chronic cases repeated searching exploratory aspiration in the involved area, as localized by the physical findings and roentgenogram, will yield at most only a few drops of pus. Exploratory incision will reveal a dense sclerosis, the surfaces exposed by the incision being honeycombed by multiple abscesses and sinuses. A few such cases that have come to necropsy have shown similar findings throughout the whole involved portion of the lung. For such a condition extirpation of the diseased portion of the lung offers the only hope of a cure. A cautery lobectomy in stages, in my opinion, offers the most to these cases, but the risk of death on the table from embolus and of a fatal secondary hemorrhage must be recognized.

Bronchiectasis: The treatment of bronchiectasis has been very discouraging and has been characterized as the most thankless task in the whole domain of surgery. Drainage, bronchoscopic lavage, pneumothorax collapse, extrapleural thoracoplasty, and lobectomy have been attempted and abandoned because of the failure of these methods to produce results or because of the high mortality following the radical types of operation. It is therefore particularly gratifying to be able to record very encouraging progress in its treatment. This progress has been the result in part of the better recognition of its varied pathology, particularly as to its distribution, and also to the selection of a several stage operation suited to the pathology present.

Bronchiectasis may be strictly localized, or diffuse with respect to one lobe or one lung, or it may be bilateral. In a series of three hundred and eighteen cases at the Mayo Clinic, it was diagnosed as unilateral in 36 per cent. Most cases first observed after years of symptoms were probably unilateral and would have been operable cases following early recognition and prompt treatment. Cases with bilateral involvement are obviously unsuited to any form of treatment, but their recognition may be a matter of a great difficulty and uncertainty. In case of some patients producing large amounts of purulent sputum the physical and roentgenological findings may fail to localize the disease or to determine whether the pus comes from one lung or the other or from both. Broncoscopy may also leave the localization in considerable doubt. In such cases I have used a pneumothorax collapse of the lung chiefly suspected as a therapeutic test. If the symptoms clear up the case is considered suitable for an extrapleural collapse, otherwise not.

The first consideration as to treatment is the possible presence of an etiological foreign body. Broncoscopic removal of a foreign body in a bronchus will bring about a cure in recent cases without extensive lung involvement.

For diffuse unilateral bronchiectasis an extrapleural collapse in stages has, in my experience,

proven safe and effective and this is the only operation which so far has proved both safe and effective. The operation involves the complete removal of the ribs from their articulation with the transverse process posteriorly to the costochondral junction anteriorly. Usually the third to the eleventh ribs inclusive are removed and in five or six stages. The operation is done under combined nerve block and gas-oxygen anesthesia. After the resection of the ribs posteriorly the nerves are injected under direct vision with a few drops of 95 per cent alcohol. This accomplishes a threefold purpose. It makes the convalescence relatively painless, a very important consideration in a several stage operation. The coughing is made relatively painless which is important in the prevention of postoperative retention of sputum and the consequent risk of flooding of the bronchial tract and resulting pneumonia, and the anesthesia persists throughout and beyond the time necessary for the complete resection so that the lateral and anterior resection of the ribs can be done in a relatively anesthetic field. Usually the ribs are resected first, posteriorly in two stages, removing eight to ten centimeter segments. The lower lateral segments are next resected in toto, then the upper anterior, and lastly the remaining upper median segments through a mid-axillary incision. The operations are done from one to two weeks apart, depending on the condition of the patient.

Thirty-four patients have been operated upon during the last four years. There has been no post-operative mortality. All the patients have been relieved of symptoms, the amount of sputum decreasing from fifty to ninety-five per cent or more. One patient died later, a case of actinomycotic bronchiectasis, not recognized as such until after the operation had been completed, when sinuses developed in the chest wall. The improvement has been constant in all other cases.

There is a distinct group of cases of combined abscess and bronchiectasis which are most baffling from the standpoint of both diagnosis and treatment. The physical findings and x-ray in these cases show extensive lung involvement, but it is impossible to determine what proportion of the changes are due to multiple discreet abscesses and what part to fibrotic changes or how extensive the associated bronchiectasis may be. The pleura is also often thickened in these cases, clouding the roentgenological plate and thereby further obscuring the findings or entirely blotting out all lung markings. The severity of the symptoms of suppuration and the amount and fetor of the sputum are the only criteria of the extent and gravity of the process.

The choice of treatment in these cases is very limited and the risk of any form of radical treatment is great. Lobectomy, cautery extirpation and extra-pleural collapse are the only alternatives. Most cases are in too poor condition for lobectomy. Partial cautery lobectomy involving the extirpation of the larger portion of a lung seems an almost equally formidable operation.

Pulmonary tuberculosis: Generally speaking, the principle of rest in the treatment of tuberculosis is well established. In case of pulmonary tuberculosis this is achieved by collapse of the lung. If the lung is not adherent to the parietal pleura collapse is easily accomplished by artificial pneumothorax. If there are extensive adhesions the lung can be collapsed by thoracoplasty. One consideration of that has prevented a more extensive adoption of this method it has been the assumption that it is not indicated if there is any definite evidence of bilateral involvement. It has been definitely shown, however, in some cases of bilateral involvement that a lesion and even a fair sized cavity in the opposite lung has healed following thoracoplasty. If this proves to be the rule as it has been shown to be in the case of extirpation of one of two bilateral organs, as for example in case of nephrectomy for bilateral renal tuberculosis, a wide field of usefulness will develop for thoracoplasty in tuberculosis.

Bronchial fistulae: Bronchial fistulae secondary to empyema, abscesses or bronchiectasis complicate the treatment of the primary condition and present a special problem in the treatment of the bronchial fistula. Much progress has been made in the matter of healing the bronchial fistulas, the first essential to the cure of the primary condition. Small, single, or multiple recent fistulas complicating empyema will usually heal spontaneously, following effective drainage and irrigation of the empyema cavity. The majority of large, single, or multiple fistulas can

be healed by persistent silver nitrate cautery which destroys the endothelium, permitting the formation of granulations and scar tissue contractions. Only exceptionally in my experience has it been necessary to do plastic operations such as decortication and suture of a bronchus or muscle or skin plastics.

Bronchial fistulas that discharge any considerable amount of purulent material should not be closed. This closure will result in the purulent discharge being coughed up and involves a distinct risk of brain abscess. I have lost one patient from such a complication.

Progress has also been made in the treatment of other conditions such as new growths of the chest wall, lung and esophagus, of mediastinal, pericardial, and subphrenic suppuration, of benign lesions of the esophagus, and of diaphragmatic hernia, and eventration of the diaphragm. We are beginning to realize that chondroma is a potentially malignant tumor in that it recurs, metastasizes and kills. Early radical extirpation is a relatively safe and curative operation. Radical resection for early sarcoma prolongs life and has been curative in some cases. Lobectomy for malignant tumor of the lung in a few cases has resulted in a lasting cure. Resection of the thoracic esophagus and the cardia for carcinoma has been successfully performed and has resulted in at least one permanent cure. Extensive mediastinal suppuration has been generally considered to be uniformly fatal, but in the last two years I have had three cases with from a half to one liter of pus in the posterior mediastinum following exploration for malignant growth that have recovered following Dakin's solution irrigation. The closed method of drainage and irrigation for suppurative pericarditis has resulted in a cure. Possibly this method may obviate the difficulty of efficient drainage of the posterior cul de sac. Encouraging results have followed earlier diagnosis and a two stage operation for subphrenic abscess. The silk thread and bougie dilatation technique has yielded remarkably satisfactory results in cardiospasm and cicatricial stricture of the esophagus. We are learning to better differentiate the types of diaphragmatic hernia and the type of operation suited to each. Early diagnosis and operation before strangulation has occurred has greatly lowered the operative mortality. Lorche has recently described a new operation for eventration of the diaphragm which seems rational and feasible. Ganglionectomy for angina pectoris has been reported to have yielded favorable results. The approach to the cardiac valves as used by Cutter and the cardioscope of Allen suggests the possibility of a new field of intracardiac surgery. The Trendelenberg operation for removing a pulmonary embolus has been successfully performed.

It may be said, therefore, that although progress in thoracic surgery is beset with special difficulties and although this field remains relatively undeveloped the fact remains that substantial progress is being made and what has already been accomplished together with the awakened interest in this field of surgery may be confidently expected to furnish the impetus to more rapid and important advance in the near future.

GUNSHOT WOUND OF THE HEART—REPAIR UNDER LOCAL ANESTHESIA WITH COMPLETE RECOVERY OF THE PATIENT

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The successful treatment of wounds of the heart is a comparatively recent achievement in the field of modern surgery and shatters the old belief that the heart is a forbidden field for surgical procedures. Thirty years have not yet elapsed since Del Vecchio[7] first demonstrated experimentally on animals that wounds of the heart may be successfully sutured, and Farina,[8] in March, 1896, was the first to attempt the suture of a human heart. The patient survived the operation but died a few days later from infection of the perdicardium and pleura. Cappelen[2] also attempted the suture of a wound of the human heart in 1896, but his patient also died of infection a few days later. Rehn[20 21] was the next to attempt this operation and reported the first successful suture of a cardiac wound with complete recovery of the patient in September, 1896. Since then numerous attempts

have been made in this field and the interest in cardiac surgery has become so lively that Ballance[1] estimates that there are now about 400 such cases reported in the literature.

This new interest in the surgery of the heart is also due in great part to the discovery that the heart has a comparatively good tolerance to manipulation (R. Matas[17], W. R. Smith[24]), a fact which is demonstrated by statistical evidence that from ten to fifteen per cent of cardiac injuries recover spontaneously with expectant treatment (Loison[16], G. Fischer[9], W. S. Schneider[22]). The degree of manipulation to which the human heart may be subjected with impunity is demonstrated by the remarkable cases

Fig. 1. X-ray of the chest of patient after self-inflicted gunshot wound of the heart. The bullet is seen in the posterior aspect of the heart.

reported by Davenport[6] and Quenue[19] in which the left coronary artery had to be ligated during the operation with recovery of both patients. The tolerance of the heart is further shown by the cases of Swearingen[26] and Shaw[23], Cunningham and Manhof who report the unexpected finding on x-ray examination of bullets in the heart with apparently no discomfort to the patients. E. Hoffmann[12] estimates that there are about fifty such case reports of foreign body within the heart without apparent injurious effect to the persons harboring the projectiles.

The clinical manifestations which may be produced by wounds of the heart are extremely variable and uncertain (Hartmann-Keppel[10], Costantini[4], Hesse[11]). All symptoms may be absent or may develop in a few days or there may be a most dramatic picture of interference with the circulation immediately after the injury. The most common signs and symptoms of a well developed case of cardiac injury are shock, the signs of internal hemorrhage, dyspnea, cyanosis, rapid pulse, enlarged area of cardiac dullness, faint heart tones, pallor and a peculiar murmur like that of the wheel of a mill if air has entered the pericardial sac. A sign which Costantini and Viogt[5] have emphasized very much is a large, immobile cardiac shadow on fluoroscopic examination. The complications are chiefly dependent on the presence of infection (C. Ballance[1], A. W. Collins[3]) and H. Klose[14] reports the possibility of the blood clot becoming loose after the heart begins to beat stronger, with the chance of the clot becoming displaced. A marked shattering of the heart is possible if the bullet enters during the period when the heart is filled with blood due to the transmission of the force in all directions (Strassmann[25]). Rupture or aneurysm of the heart has occurred some time after the injury when the scar tissue or sutures give way (H. Klose[15]).

The results of operation for cardiac injuries must be considered as favorable. Ballance[1] from a study of 58 cardiac injuries received during the last war was able to report 44 recoveries and 14 deaths. Hesse[11] in his masterful work on 48 cases of cardiac injuries operated on, reports a mortality of 69%. This author lays great stress on early operation and points out that his patients operated on within three hours showed a mortality of 35% while those who were delayed beyond three hours had a mortality rate of 86%. There are not many reports of these patients at some distant date after the operation, but Jones[13] reported a patient examined seven years after the injury who was in a good state of health, and Proust[18] reported a patient examined physically by x-ray and with electro-cardiogram ten years after the operation and could find no evidence of any abnormality.

In view of the interest awakened in cardiac surgery and the excellent result possible after immediate operation in wounds of the heart, we wish to report a case of gunshot wound of the heart inflicted in a very curious manner and successfully operated upon under local anesthe-

sia. Subsequent examination physically and with the electrocardiogram showed a perfect result in so far as could be determined by these methods.

Case. 1. The patient, M.P., aged 37, a laborer, was admitted to the Cook County Hospital December 25, 1924, as an emergency case of gunshot wound of the heart. He had become despondent and decided to commit suicide about three and a half hours before being admitted to the hospital. He drove a piece of file about two inches long into the lead part of a bullet and packed this tightly together with some sulfur and black gunpowder into a piece of iron pipe about one foot long. He held the pipe against the upper left portion of his abdomen and caused an explosion by inserting a piece of redhot wire in the free end of the pipe. The patient complained of some pain in his upper abdominal region but would not give any further history. Examination showed a temperature of 98.6, pulse 122 and respirations 26 per minute. The area of cardiac dullness was not enlarged but a "regular irregularity" was present, the heart missing about every sixth beat. Examination of the abdomen revealed a small punctured wound about 4 mm. in diameter and located about 6 cm from the umbilicus. There were no tender or rigid areas or evidences of fluid in the abdomen. The pain in the abdomen and in the region of the heart soon became more severe and an x-ray examination was decided upon. A foreign body about two inches long was seen in the area of the cardiac shadow and fluoroscopic examination showed this foreign body to move with each beat of the heart.

The patient was immediately prepared for operation where the following procedure was carried out under local anesthesia. A flap was made with the nipple in the center and the base towards the axilla. A horizontal incision was then made in the sixth interspace connecting one angle of the flap and another at the fourth interspace. The third and sixth ribs and the left border of the sternum were then exposed, about five inches of the fifth rib was removed and the sixth rib sawed through in order to obtain a good exposure. The inner margin of the flap was then freed and the pleura opened, allowing the removal of a large blood clot. The pericardial wound was then enlarged, the blood from this cavity removed, bleeding points stopped and the projectile removed from the posterior aspect of the left ventricular wall. The pericardium was then sutured with continuous catgut and the superficial layers closed with silk worm gut. No drainage was made. In view of the wound of entrance in the upper abdomen an exploratory incision was made in this region but nothing abnormal except the track of the bullet was seen. The operative wound was closed with a small gutta percha drain in place.

The patient made an uneventful recovery and was discharged in an apparently good state of health on January 9, 1924, fifteen days after the operation. X-ray examination on the day before his discharge showed a definite enlargement of the cardiac shadow, but no evidence of fluid was seen either in the pericardial or pleural cavities. An electrocardiographic examination made on the same day showed a very slight degree of sinus arrhythmia, a P-R interval of 0.12 seconds, a cycle duration of 0.64 seconds, corresponding to a rate of 93 per minute. P and T were isoelectric in lead III, R was notched in lead III but QRS measured less than 0.08 of a second which contra indicated a true bundle branch block. T in lead II was very low and suggestive of inversion; there was marked muscular tremor and the electric axis was 53 normal.

From the foregoing it is evident that the patient made an uneventful and practically complete recovery after operation under local anesthesia for removal of a foreign body from the heart inflicted

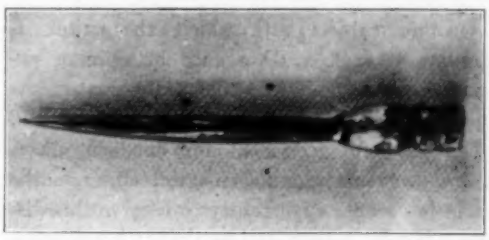

Fig. 2. Actual size of projectile removed from heart of patient with complete recovery.

by a gunshot wound about six hours before operation. It is difficult to say whether the cardiac enlargement seen with the x-ray on the day of discharge from the hospital existed before the injury or was the result of the trauma.

Resume.

1. A case of gunshot wound of the heart is reported which was inflicted in a very curious manner.

2. Operation under local anesthesia six hours after the injury resulted in complete cure as far as could be determined and the patient was discharged from the hospital fifteen days after operation.

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THE VALUE OF GASTRO-ENTEROSTOMY IN THE TREATMENT OF DUODENAL ULCER*

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On no subject with which the writer is familiar is such a divergence of opinion expressed as is found in authoritative statements on the relative merits of gastro-enterostomy and other forms of treatment for duodenal ulcer. Every large medical and surgical clinic in the world has ample opportunity to observe this disease. Hardly a year goes by that it is not made the subject of discussion at some important medical or surgical conference. On such occasions there is a recital of our lack of knowledge concerning the true etiology of the disease, with a rehearsal of the theoretical causal factors—none of which has been proved. There is discussion as to the relative value of medical or surgical, or combined treatment, with the optimists claiming 90-100% cures, and holding that gastro-enterostomy is among the most satisfactory curative agencies known to surgery, and others finding dissatisfaction with every method of treatment.

Out of all this testimony one has difficulty in disentangling the kernels of truth, as he becomes lost in a maze of contradictory evidence. Duodenal or post-pyloric ulcer only is under discussion and it is needful to emphasize that the pyloric ring is a definite and important dividing line, a fact which is too often overlooked.

Gastro-enterostomy was first applied to the treatment of pyloric obstruction nearly thirty-five years ago, and was devised for the purpose of obtaining an outlet to an otherwise closed viscus. The results were highly satisfactory, and in spite of vicious circle, intestinal obstruction, hemorrhage and other complications, it came immediately into general favor which was well deserved.

At that time pyloric ulcers in large number remained untreated until huge obstructing cicatrices developed, so that relief was demanded, not from the ulcer itself, but from this complicating lesion. When for any reason a second operation was performed, the surgeon was struck with the fact that the presence of the operative atoma had not only relieved the obstruction but had also made the callous mass to disappear. Hence arose the hope that a gastro-enterostomy was curative of the duodenal ulcer itself. Then followed a long abuse of the operation, in which it was done not only when a duodenal ulcer was present, but when the symptoms of this lesion were present, even though at operation no ulcer could be demonstrated. The experience of having an ulcer exhibited for inspection, which was purely an artefact, caused by blanching of the tissue due to traction or muscular spasm, was not uncommon. This period placed upon gastro-enterostomy an undeserved odium. The operation was called upon to relieve symptoms which were unrelated to a known lesion. However, there were gradually developed improvements in technique, which greatly added to the efficiency of the operation in properly selected cases. Thus the operation became standardized both in its indication and its technique, so that during the past decade only minor changes have been advocated. Opinions are still at variance on many of these, but in all probability they are not of first importance in determining the outcome.

Requisites are—a stoma of approximately two inches in length, placed in the posterior wall of the motor part of the stomach, that is in or near the antrum, and as near as possible to the greater curvature. The suturing of the opening in the mesocolon on the gastric side of the anastomosis prevents herniation. Absorbable suture material is used throughout. The jejunal loop must be short and the efferent limb must hang free. Disputed joints include the direction of the gastric incision—horizontal, vertical, or oblique in one or the other direction, the use of retention clamps—and the careful suture of the jejunal and gastric mucosae as a separate layer. This stage in the development of the operation may

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be said to correspond to the present decade, and therefore, in reaching a correct evaluation of the operation as at present used in the treatment of duodenal ulcer, one should confine the study to reports and material coming to hand within that time.

One important difference of opinion among operators during this period concerns the attempt to reproduce the condition for which gastro-enterostomy was first done, namely, a pyloric obstruction. In small non-obstructing duodenal ulcers, surgeons early began to find dissatisfaction with the results of simple gastro-enterostomy. They believed that the stoma failed to completely sidetrack the gastric contents from the ulcer site. To meet this need of protection to the ulcer, the operation of pyloric exclusion was added to the gastro-enterostomy. Eiselberg[1] devised the method of complete division of the pylorus, and infolding closure of the two ends. Girard,[2] Kelling,[3] Mayo,[4] Wilms,[5] Berg,[6] Brewer,[7] and others, followed with various modifications. The operation became a recognized adjuvant to gastro-enterostomy in the treatment of duodenal ulcer, and was employed in many important clinics. Patterson,[8] in a paper read before the Clinical Congress of Surgeons in Chicago in 1914, opposed this practice, and declared that "the occlusion of the pylorus is an unnecessary complication of gastro-jejunostomy and is based on erroneous pathology." Lewisohn[9] in 1916 quotes this statement and adds the comment: "This opinion, however, is rather an isolated one"—and "in fact most surgeons agree that a simple gastro-jejunostomy will not permanently cure the disease." He concludes: "The vast majority of surgeons therefore agree that pyloric exclusion ought to be added to gastro-jejunostomy to insure the permanent cure of pyloric and duodenal ulcers." I am entirely in accord with the view that gastro-jejunostomy alone may not permanently cure duodenal ulcer, but question the view that pyloric exclusion should be added, and is a curative agent. I accept Patterson's teaching as quoted. Finsterer[10] in the notes of his lectures given in this country, condemned pyloric exclusion and quoted Von Habere[11] as having discarded it because of the high incidence of gastro-jejunal ulcer as a sequela.

Sherren[12] in 1920 says pyloric occlusion does not add to the efficacy of gastro-jejunostomy, has no bearing on the healing of the ulcer, or the continued potency of the stoma. Experimental and clinical evidence is abundant that a properly placed gastro-enterostomy permits emptying of the stomach through the stoma, rather than through the patent pylorus.

Hartmann[13] in his paper before the American Surgical Association in 1914, admirably presented this evidence and concluded that a stoma placed in the motor portion of the stomach, that is the antrum, gave sufficient emptying of the stomach to protect the duodenal ulcer, while one in the fundus would not do so. The purpose in introducing the discussion on pyloric exclusion to to show that surgeons found dissatisfaction in a simple gastro-enterostomy. The hope of bettering it by pyloric exclusion did not materialize, and gradually this supplement is losing favor.

Then followed an application of the observation that many cases of acute perforating duodenal ulcer seemed to be permanently cured by simple suture of the perforation. This led to the deliberate destruction of the ulcer by excision, cautery, or inversion. In conjunction a gastro-enterostomy was or was not performed. This adjuvant enjoys a very considerable popularity up to the present time, but its use is by no means universal, and I am unable to determine from the literature that its employment yields more satisfactory results than its omission.

Finney,[14] Flint,[15] and Horsley [16] frankly dislike gastro-jejunostomy as a curative measure for duodenal ulcer. We have their teaching favoring a pyloroplasty, with coincident excision of the ulcer. While this teaching has not been followed in most clinics, there are strong advocates of the pyloroplasty and its associated procedure gastro-duodenostomy.

Boyden[17] makes this emphatic assertion: "There is probably no such well established and frequently performed operation which has been adhered to by the leaders of surgery with apologies as gastro-jejunostomy. It has long since been proven physiologically and mechanically non-operative, except in cases of pyloric stenosis." These statements were made in an advocacy of the Horsley operation with excision of the ulcer, as opposed to a gastro-enterostomy. In the discussion following his paper there was the usual differences of opinion expressed, which convince the reader that duodenal ulcer is not satisfactorily cured by gastro-enterostomy in the hands

of many surgeons. Wilensky[18] in studying the fuctional results following gastro-enterostomy in 1922 says "For a number of years the operation of gastro-enterostomy has been gradually losing in favor, and at the present time dissatisfaction with the surgical procedure is approaching an extreme point." In this paper Wilensky concludes that the best *functional* results are obtained when a posterior gastro-enterostomy is made with a short jejunal loop by the use of the Murphy button, the stoma being close to the greater curvature and in the pyloric region of the stomach. His findings seem to show that the addition of a pyloric occlusion also was beneficial. The results are determined from roentgenological findings on gastric mobility and chemical studies in a fasting condition, and following the Ewald test breakfast and the Riegel test meal. He fails to comment on the clinical symptoms of the patients, but says, "These tables should not be interpreted as indicating in any way the number or percentage relationships of the cases cured or not cured." The use of the Murphy button is certainly not the choice in most clinics, and as pointed out above, pyloric exclusion is a definitely discarded procedure by many of the most experienced surgeons. Wilensky[19] in an earlier paper (1918) reported another study. He states as follows on the results of pre-operative findings. "Ulcerating lesions in the stomach or duodenum are not necessarily accompanied with disturbances in the normal physiology of acid secretion." He further shows that when a disturbance is found, it bears no relation to the site, the size, character or age of the ulcerative process. The post-operative findings are equally inconclusive. White[19A] studied a series of cases pre- and post-operatively on the sixth and eighteenth days. There was a definite reduction in acidity after the operation amounting to about one-half, but there was invariably less of a reduction at the later examination than at the earlier. He considers this lowering of acidity as a "rupture" of the vicious cycle, whereby healing takes place. No evidence is found in these studies that acidity is definitely and permanently lowered by the presence of the gastro-enterostomy. This opposes a belief held by many, that lowered acidity results and is a curative factor.

Smithies,[20] statistical analysis of 273 cases following gastro-enterostomy is instructive. He found 216 patients showing some degree of post-operative pain or gastric disturbance, sufficient to prevent their being classified as well. A larger per cent. of these belonged to duodenal ulcer than to pyloric or gastric. It is fair to draw the conclusion from Smithies' studies that he was unable to definitely determine the cause of the symptoms complained of either by roentgenological or chemical study, in a very large number of patients. One fact stands out, namely, that gastro-enterostomy gives great relief for a certain time, but that a large per cent. sooner or later experience a recurrence of symptoms which can not be ignored by the patient or the surgeon who has undertaken the patient's relief.

Hutchison[21] writing in the *British Medical Journal* in 1918 on the "Disappointments after Gastro-enterostomy" says "The operation may have relieved the patient of the devil of pain, but it has let in seven other devils which are about as disagreeable tenants." The complaints of such patients are various: there is a heavy feeling or distention in the epigastrium as if the stomach were too big, or "a feeling of emptiness, as if the food dropped straight down"—weakness, faintness, depression, failure to gain weight, etc. His explanation of these symptoms is vague, and he gives no information as to how they may be avoided or corrected. Moorehead,[22] in discussing this paper, gives three causes for the disappointments. 1. Unhealed ulcers. 2. Marginal ulcers, which are much more common than believed (and usually reported). 3. Forcible contractions in a dilated pyloric pouch, which he believes arises from placing the stoma too far from the pylorus.

Hort[23] in the discussion, expresses the belief that all these symptoms can be prevented or cured by taking care of foci of infection, tonsils, teeth, etc., because these symptoms result from such infection, producing a recurrent crop of acute and healing ulcers.

The literature contains much further evidence that gastro-enterostomy as a cure for duodenal ulcer has been disappointing in the experience of many surgeons. It must be noted that this evidence comes almost entirely from surgeons and does not take cognizance of the rather more caustic comment that comes from the general internist and the non-operating gastro-enterologist. Their views are well summarized by

Brown[24] in his paper before the American Medical Association in 1922. He says "In my experience in the chronic group of cases, even without obstruction, surgery has been more effective and more permanent in its results in the majority of cases than medical treatment. Notably in cases where pyloroplasty, resection, or the Polya operation has been done. To me, gastro-enterostomy has always seemed peculiarly unphysiologic. I have rarely seen cases, except those of almost complete pyloric obstruction, in which it has been absolutely successful, and gastro-enterostomy has never seemed to me the operation of choice, but the operation of necessity. It is interesting to note that practically the same percentage of cures is claimed by the followers of each special scheme of diet, as by the followers of special surgical procedures. Each must be deluded as to these figures. Certainly from 75-90 per cent. of ulcers are not cured in the true sense of that word, by either medical or surgical procedures. Our clinics and consulting rooms are filled with patients suffering from recurrent symptoms after medical treatment, and with patients that report with the same or different symptoms after surgical therapy."

It is apparent that a considerable portion of the profession are not satisfied with a simple gastro-enterostomy as the treatment for duodenal ulcer. However, it is obvious that the evidence is not universally convincing, because gastro-enterostomy is still a daily procedure in the hands of experienced surgeons.

Moynihan[25] in 1919 says: "The operation of gastro-enterostomy in appropriate cases by competent operators is probably the most successful of all surgical procedures of equal magnitude." He attributes the disappointments and failures to many factors—(a) The operation has been performed for disorders other than gastric or duodenal ulcers. (b) Failure to remove other foci of infection within the abdomen, appendix, gall bladder—and above all failure to deal with the ulcer itself. Either the large vessels going to it should be ligated, or the ulcer should be infolded. He rarely excises the ulcer or resorts to pyloric occlusion or resection, "for the results of the simpler operation of gastro-enterostomy are hardly to be improved." (c) Defects in technique, of which he enumerates—1. Long loop. 2. Short loop, but efferent arm blocked by kink or adhesions. 3. Recurrence of adhesions on the raw surface left after separating the jejunum from the surface of the mesocolon. 4. Rotation of jejunum on long axis. 5. Too small opening. 6. Badly placed opening; should reach to greater curvature whether vertical (as he refers), or oblique left to right or right to left, matter very little. 7. Hernia. 8. Use of non-absorbable suture. 9. Ventral hernia. (d) Late complications—1. Jejunal ulcer. 2. Cancer. In his conclusion he evinces an enthusiasm for gastro-enterostomy as a cure for duodenal ulcer.

Bevan[26] states that 90 per cent. of duodenal ulcers are cured by gastro-enterostomy, with 2 per cent. operative risk and 3 per cent. of marginal ulcer.

Mayo[27] finds satisfactory results in 90 per cent. of the gastro-enterostomies, but significantly believes that with increasing experience and knowledge the practice of excising certain types of duodenal ulcers and combining this with a pyloroplasty will become more general.

Balfour[28] quotes Sherren as having 92.8 per cent. of patients "perfectly well" after two years and as saying "patients who go for two years without symptoms never develop them later." Balfour reports 1,000 cases who had been operated on at least ten years previously and finds 83 per cent. with "relief from the symptoms for which the operation was performed." Yet there were 90 cases who still had pain—25 who showed a recurrence of vomiting—57 who showed a recurrence of hematemesis, melena, or both, and 35 who had a recurrence of the ulcer either in duodenum, stomach, or stoma—making a total of 207. Balfour states that only 22 of the 90 who had pain thought it necessary to return for examination, but this does not justify considering the remaining 88 as being "relieved of symptoms." This analysis may be misleading because some of the patients included may be suffering from more than one of the symptoms, and they may be included in two or more groups. Among the causes of disappointing results Balfour mentions failure to remove the appendix, young patients, the constitutional inferiority type of patient, a small ulcer without obstruction. The results are not so certain if a patient has had mild symptoms of short duration, low acids, and a small uncomplicated lesion. Such cases from a technical point of view are satisfactory for local excision of the lesion with

or without pyloroplasty, but experience in the Mayo Clinic has shown that the end results with these procedures are not definitely better than with gastro-enterostomy. Balfour advocates removal of the ulcer, however, when it is reasonably accessible. There seems to be an inconsistency in Balfour's reasoning concerning this. The results he believes are very satisfactory when the ulcer is not removed, but it should be removed when this can be easily done.

Peck,[20] in a paper presented before the New York Surgical Society in 1924, reported approximately 90 per cent. cures following gastro-enterostomy for duodenal ulcer. He protested against the more radical measures and he adds neither excision of the ulcer nor exclusion of the pylorus to the gastro-enterostomy. He presented cases illustrating cures of many years, who at the time of operation had harbored extensive indurated and chronically perforating ulcers. They were free from every symptom of digestive discomfort, though one patient had suffered from a hemorrhage six years following the operation, and two years prior to being exhibited. Peck explained in detail his technique and stated that it was rigidly adhered to in all cases. He claimed for it no advantage except that if the operation were always done in the same way the surgeon developed a mastery of technique, which he believed had much to do with obtaining uniformly good results. It is important to note that he uses a nearly vertical incision in the stomach, running downward from the right margin of the cardia. Thus the stoma lies proximal to the pyloric antrum. He also uses a through and through stitch traversing all layers. The discussion following this paper seemed to indicate that the members of the Society agreed with his conclusions, and that gastro-enterostomy had proved a satisfactory operation for duodenal ulcer in their hands.

I presented three cases in whom I had resected the first portion of the duodenum and the pyloric antrum for extensive induration and chronically perforating ulcers of that portion of the duodenum, followed by a gastro-enterostomy or a Polya repair. This procedure did not elicit favorable comment, and one was led to infer that the Society's opinion concurred with Dr. Peck's views.

One is forced to the questions, why this great diversity of opinion as to the value of gastro-enterostomy in duodenal ulcer? Why do we find statements that "the operation has proved a failure," "is only done with apology," "causes a marked disturbance of gastric physiology," "must be combined with pyloric exclusion," "must include infolding of the ulcer or its excision," on the one hand; and on the other, statements that "no operation of equal magnitude gives better results," that 90 per cent. of the patients are absolutely free from symptoms and "in the remainder the discomforts may almost be considered as negligible"; that there is no need of pyloric exclusion which is "an unnecessary complication of gastro-jejunostomy and is based on erroneous pathology?" Why do we find Moynihan,[23] Patterson,[8] Mayo,[27] Bevan,[26] Deaver,[30] Peck,[20] Balfour,[28] — doing the operation constantly and with enthusiasm, and Finsterer,[10] Haberer,[11] Finney,[14] Horsley,[16] Hutchison,[21] Boyden,[17] Flint[15]—discarding it for some other method? Why in every general discussion should there be a contradictory note, even among the surgeons, which note is emphasized by the internists and gastro-enterologists?

Is it because many ill-considered opinions find their way into the journals? Is it because the subject possesses such inherent difficulties that the truth is yet to be discovered, and in the meantime every one is interpreting findings to bolster a preconceived conviction? Is it because a condition of good health, of "cure" is such a vague uncertain thing that to one observer a patient is seriously suffering, while to another his "discomforts are so minor as to be negligible?" Or is it that there really is such a difference in the results obtained by different surgeons? If so, do all the successful surgeons follow the same technique? Certainly they do not all follow the same technique. Some infold the ulcers, some excise with knife or cautery, sme insist on the stoma near the pylorus, some insist it shall not encroach on the antrum. Some make it follow the vertical line, some make it oblique from left to right and some from right to left. Some exercise great care in sewing the two mucosae together with a separate suture. Some suture with a through and through stitch Some use clamps. Some condemn them. Many surgeons of experience carefully select from these divergencies the steps that their judgment dictates and put them into execution with skill. Yet they find no enthusiasm for the operation

and are inclined to be apologetic that they can suggest no more certain method of curing their patient.

I have tried to be judicial in this investigation, and my sincere opinion is that these questions must remain unanswered, but if we hope to really cure chronic duodenal ulcer, we must find some means more efficient than gastro-enterostomy alone has proved to be, done by whatever technique.

It is not to be inferred that the sufferer from this lesion can gain no relief from his suffering by the operation of gastro-enterostomy, or that a large per cent. of such sufferers, (possibly over a majority) may not be restored to good health; but there is a large number in which this is not accomplished. They remain more or less sufferers in spite of our best efforts. Our dilemma lies in the fact that we are ignorant of the reasons for our successes or our failures. If we fail to cure a hernia, we know wherein we failed, if cancer recur, we know we failed to remove it in toto, if a fracture end in a poor result we know we failed to correct the malposition of bone and soft parts, if a permanent biliary fistula follow choleocystectomy, we know we have left an obstructive element in the common duct. In some duodenal ulcers we know we have failed because the ulcer did not heal, or because a marginal ulcer developed, or because a kink in the efferent loop formed. But we do not know why these things happened, and in many failures no such demonstrable cause of failure is present. Even when these are present we can often only surmise their presence, and are at a loss to know a method of relief. There are no reliable data as to the occurrence of an unhealed ulcer, but many individual reports show that such have been found at a second operation. More complete data are available as to the frequency of marginal ulcer. Bevan,[21] Mayo,[22] Moynihan,[25] and many others place this complication as occurring in 2-3 per cent. of the cases. Sherren[12] found it present in 19 of 318 cases in which gastro-enterostomy was done for duodenal ulcer. "No jejunal ulcer had arisen in any uncomplicated case that he had operated upon since February, 1914, and no enastomosic ulcer since he gave up the use of an unabsorbable suture for the outer layer." Erdmann[24] cites several cases in which only absorbable sutures were used.

Finsterer[10] and Haberer[11] find this complication in a much higher per cent. of cases where unilateral exclusion of the pylorus was done. Finsterer states that gastro-jejunal ulcer occurred in 17—20 per cent. of such cases. Though much has been written on the subject I can find no conclusive etiological factor other than the use of non-absorbable material and the elimination of this has certainly had a beneficial influence in the prevention of this sequela.

The outcome of 91 cases of demonstrated duodenal ulcer operated upon in the clinic of the Cornell Division at Bellevue Hospital since 1916 is shown in the tables.

TABLE 1

POSTERIOR GASTRO-ENTEROSTOMY ONLY

No. 3. Failure—under observation 8 years. Continued pain and digestive disturbance. Re-operation after 7 years. Scar duodenal ulcer and adhesions found.
No. 5. Fair—for 6 months. Pain after 1 year.
No. 6. Excellent—1 year.
Nos. 7 & 8. Fair—6 months.
No. 10. Excellent—5 years.
No. 14. Fair—2 years.
No. 16. Failure—Excellent 6 months. Recurrence 1 year. Re-operated 6 years. Ulcer found. Died pneumonia.
No. 17. Excellent—6 months.
No. 19. Failure—6 months to 7 years.
No. 21. Fair—Excellent 6 months. Return symptoms 3 years. Controlled by diet and alkali.
No. 25. Excellent—4 years.
No. 26. Poor—6 months.
No. 27. Excellent—6 months.
No. 28. Fair—6 months.
No. 37. Excellent—6 months. Indigestion 4 years.
Nos. 40 & 41. Excellent—5 years and 6 months, respectively.
No. 42. Failure—1 to 4 years.
No. 48. Fair—1 to 3 years.
No. 50. Failure—6 months to 5 years. Ulcer present by x-ray.
No. 56. Failure—Well for 2 years. Ventral hernia repaired after 1 year, when no ulcer was found. Symptoms recurred 2½ years. X-ray shows pyloric obstruction.
No. 66. Fair—3 months.
No. 69. Excellent—6 months.
Nos. 71 & 73. Failures—well 3 months. Then recurrence, all symptoms 15 months and 20 months, respectively.
Nos. 74 & 75. Excellent—2 years.
Nos. 76 & 81. Excellent—2 years and 1½ years, respectively.
No. 87. Failure—Re-operation 10 months, ulcer present.
No. 88. Poor—6 months.
No. 89. Fair—Excellent 6 months. Then recurrence. Control by diet and alkali.
No. 91. Failure—X-ray shows ulcer 8 months.
No. 92. Excellent—10 months.
Nos. 93 & 94. Fair—Return symptoms 4 months and 5 months, respectively. Controlled by treatment.
No. 95. Excellent—7 months.
Nos. 96 & 100. Fair—9 months and 2 years, respectively.
No. 112. Excellent—2 years. Pyloric obstruction present at time of operation.
No. 113. Fair—2 years. Diet and alkali control symptoms.
No. 115. Failure—Post-operative death. Autopsy showed open bleeding vessel in base ulcer.
Nos. 118-121-125-130. Fair—3 months, 2 months, 10 months, 6 months, respectively.
Nos. 134 & 143. Excellent—5 months and 3 months, respectively.

Excellent=Perfect health without treatment..18
Fair=Some symptoms controlled by diet, etc..18
Poor=Some symptoms not controlled by diet, etc. 2
Failure=Condition unchanged by operation, even with diet, etc. 11
49

TABLE 2

POSTERIOR GASTRO-ENTEROSTOMY PLUS PYLORIC OCCLUSION

No. 1. Fair—well 6 months. Return symptoms 1-2 years.
No. 2. Excellent—6 months.
No. 4. Excellent—1 year.
No. 9. Failure—6 months to 6 years.
No. 11. Fair—under observation 8 years. Symptoms present.
No. 12. Excellent—6 months.
No. 13 Failure—no relief 6 months.
No. 18. Fair—fullness, discomfort 6 to 18 months.
No. 23. Excellent—6 months.
Nos. 24 & 30. Fair—6 months each.
Nos. 31-32-33. Excellent—6 months, 6 months, and 4 years, respectively.

No. 45a. Fair—excellent 6 months. Then return symptoms controlled by diet and alkali 4 years.
No. 128. Excellent—1 year.
Excellent=Perfect health without treatment.. 8
Fair=Some symptoms controlled by diet, etc. 6
Failure—Condition unchanged by operation, even with diet, etc..... 2
16

TABLE 3

POSTERIOR GASTRO-ENTEROSTOMY PLUS REMOVAL OF ULCER, BY ACUTE PERFORATION, CAUTERY, EXCISION, INVERSION OR RESECTION WITH PYLORIC PORTION OF STOMACH

No. 15. Excellent—Acute Perforation. Suture—6 months to 2 years.
No. 34. Failure—Acute Perforation. Suture. Excellent 6 months. Then return of symptoms for 4 years. Re-operation. Duodenal ulcer and jejunal ulcer found. Latter excised. Well 7 months.
No. 51. Excellent—Ulcer cauterized. 3 years.
No. 53. Excellent—Ulcer inverted. 3 years.
No. 72. Failure—Acute Perforation. Suture. Immediate result fair. Return symptoms uncontrolled by diet, etc.
No. 82. Fair—Acute perforation. Suture. Excellent 6 months. Fair 15 months.
No. 85. Fair—Polya. 6 months to 1 year.
No. 103. Fair—Billroth II 6 months.
No. 104. Excellent—Acute perforation. Suture. 3 years.
No. 111. Excellent—Ulcer cauterized. 1 month.
No. 119. Fair—Ulcer cauterized. 2 months.
No. 133. Fair—Billroth II. 5 months.
Nos. 136-138-142-144-146. Excellent—Polya. 4 months, 5 months, 3 months, 1 month, respectively. 5
Excellent=Perfect health without treatment..10
Fair=Some symptoms controlled by diet, etc.. 5
Failure=Condition unchanged by operation, even with diet, etc.
Acute perforations 2
17

TABLE 4

DEATHS

No. 46. Posterior Gastro-enterostomy and Pyloric Occlusion. Died 3 hours post-operative.
No. 47. Posterior Gastro-enterostomy only. Re-operated on 13th day for drainage of abscess containing alkaline fluid. Presumably leakage from stoma.
No. 84. Posterior Gastro-enterostomy only. Ulcer adherent to liver. Died 5 days post-operative. No autopsy.
No. 91. Posterior Gastro-enterostomy only. Patient in extremis. Could take no nourishment. Fed through jejunostomy for 18 days before operation. Died starvation.
No. 95. Posterior Gastro-enterostomy with Cauterization of Ulcer. Died 9th day from hemorrhage thought to come from ulcer site.
No. 108. Polya. Died post-operative pneumonia.
No. 110. Polya. Died post-operative hemorrhage or peritonitis. No autopsy.
No. 115. Posterior Gastro-enterostomy only. Died post-operative hemorrhage. Showed at autopsy to have come from eroded vessel in ulcer.
No. 139. Polya. Died post-operative pneumonia and lung abscess.

Though the technique has not been quite so uniform as that given in Dr. Peck's[29] series, the same general method has been followed in doing the gastro-enterostomy. Non-absorbable sutures have been the invariable rule. The stoma is made in or close to the antrum, as near as possible to the greater curvature, and usually in an oblique direction downward from left to right. Its length has been from 2" to 2½" The rent in the mesocolon is sutured to the gastric side. The jejunal stoma is longitudinal on the antimesenteric mid-axis. The short or no loop has been used, usually with reversal, but when non-reversal made a more easy fall this was used. The Treitz fold of peritoneum is divided when indicated. In some cases care was taken to suture the mucosae separately, but since this was in the later part of the series, we cannot say that the results have been bettered thereby. The use of clamps has been general but not invariable, and no conclusions can be drawn concerning this feature. Pyloric exclusion—mostly the Wilms method was employed in the earlier cases. They all seemed to me to have a much harder time post-operatively than when this was not done. Every effort has been made to keep all patients under medical and dietetic care following operation and to have them report back at intervals to the followup. An almost invariable rule was that they remained in the hospital for twenty days at least, and then spent two weeks at the Burke Convalescent Home in the country.

Bellevue is a large municipal hospital and receives as its clientele the poorer and harder worked classes. Their ability to follow a careful regime is limited both by environment and by ignorance. Many of them belong to the floating population, and it is difficult to keep them under continued observation and care. With the aid of the department of gastro-enterology at the Cornell Medical College, which is directly across the street from the hospital, we have had greater success in this than would have otherwise been possible.

The series here presented only includes those cases in which a posterior gastro-enterostomy was done either alone or in conjunction with other procedures. Simple excision of the ulcer, pyloroplastys, and acute perforations with simple suture are not included. Acute perforations which had a posterior gastro-enterostomy in addition to suture of the perforation are included provided they survived the peritonitis resulting from the perforation.

Granting that we have over-emphasized in Table I of Simple Gastro-enterostomy the symptoms which class certain cases as fair or poor, as suggested by Wm. J. Mayo[35] in a recent editorial, there still remains an impressive array of failures. Even these failures have not condemned the patient to a life of complete invalidism. They are most of them earning their living under the handicap of the disease. But this they were doing before the gastro-enterostomy was performed, and the operation is classed as failure because it failed to alter the condition for any considerable time. The same is true of the "Fair" cases. They are improved and get on fairly well with care in their diet and work. But so they did before the operation, and it seems to us that the operation is not the most

important factor in the improvement. One is forcibly struck with the number of cases that are classed excellent after a short period following the operation, but at a later date show marked symptoms placing them in the class of failures. It is also to be noted that the failures are often due to the fact that the ulcer did not heal, or in the healing left deforming scars or crippling adhesions. At the most enthusiastic estimate only 36 satisfactory results can be accepted, that is approximately 73 per cent., against 11 failures, approximately 22 per cent., in the 49 cases which were treated by posterior gastro-enterostomy alone. It is probable that those cases classed as excellent or fair for short periods only, have remained in statu quo because every effort is made to keep all cases under observation, and if the operation failed to give relief, the patient is more apt to report back for advice.

A better showing is made in those cases in which a pyloric occlusion was added to the posterior gastro-enterostomy, in that only 2 failures in 16 cases are recorded. See Table 2.

Still better is the result where some method of removing the ulcer is employed,—only 2 failures are found in this series of 17 cases, and both these were when the ulcers were destroyed by a pathological perforation. Eliminating these two cases, and including the cases classed as fair, on a more favorable scale we find 15 cases giving a satisfactory degree of success with no failures. (See Table 3.) Turning now to the fatalities, Table 4, we find a disproportionate number debited against the more radical procedures, particularly the Polya type. It is true that this operation was done only in those cases showing the most advanced lesions—great induration, chronic perforations, and complicating adhesions. It is also true that the deaths occurred in the earlier cases, when the technique was not so perfected as in the simpler, more standardized operations. Further, these operations have been done in many cases of gastric ulcer, and recent cases of duodenal ulcer not included in this study. These factors deserve consideration in estimating the relative danger of the various operations. Our results will be seen to confirm my study of the work of many other clinics, namely that gastro-enterostomy alone as a curative factor in duodenal ulcer leaves much to be desired. Either the changes brought about by this procedure are not those adapted to the permanent cure of the ulcer, or the technique must be farther improved to obtain this result. There does not seem to be much hope that the latter can be accomplished when one considers that the operators reporting the best results differ in many important details, and those operators who do not claim complete satisfaction from gastro-enterostomy follow in all essentials the same technique, not differing more than their more successful colleagues differ among themselves. A general tendency is seen in the later writings of the most enthusiastic supporters of gastro-enterostomy to limit this operation more than they have in the past, and to advocate in an increasing number of cases a supplementary procedure, or the more radical operation of resection. Peck is a notable exception to this, in that he emphatically protests against such tendency, and his paper before the New York Surgical Society was presented with the purpose of combating the more radical procedures. The more recent writings, however, of Moynihan,[25] Judd & Rankin,[42] C. H. Mayo,[4] and others, indicate to me that they are finding less complete satisfaction in gastro-enterostomy alone, than had formerly been the case. I trust that I am not misinterpreting them in this respect.

The most ardent advocates of something different from the gastro-enterostomy are Finney,[14] Flint,[15] and others, who frankly prefer some type of pyloroplasty, DeQuervain[36] (who finds only 65 per cent. counts after gastro-enterostomy alone) and Finsterer[10] who advocate very extensive resections, even for small duodenal ulcers, and Haberer[11] who also advocates excision of a less extensive type. These operators obviously believe that gastro-enterostomy does not fulfill the needed conditions for curing duodenal ulcer.

It is fully appreciated that until the etiology of duodenal ulcer is more clearly understood, our treatment must to a certain degree be empirical. While all attempts up to the present time have left the etiology largely an unsolved problem, progress is being made towards a solution. The studies in the direction of proving the relation of foci of infection to the production of ulcer are continually going forward: for example those recently reported by Nakamma[37] working with Rosenow.[38] Many writers believe that their clinical results are improved if they successfully remove all possible foci of infection, either within

the abdomen, including the ulcer itself, as advocated by Moynihan,[39] or in extra-abdominal parts as urged by many writers. Another important element in solving the cause of ulcers lies in the production of experimental chronic ulcers in animals, as accomplished by Mann & Williamson[40], and also by Dragstedt and Vaughan.[41] It is therefore a justifiable hope that this long baffling problem will ultimately be solved, and when it is solved, our treatment will become much more accurate, and prophylaxis will in all probability become a successful accomplishment.

Until this is accomplished, what course should be followed by the profession in treating duodenal ulcer? Notwithstanding the enthusiasm and satisfaction of some surgeons for the operation of a simple gastro-enterostomy, I think it is fully demonstrated that this operation is not a completely satisfactory solution of the problem. It however, has a definite value until something better is evolved, and I want to guard against the assumption that I advocate its abandonment. I shall beyond doubt do the operation myself many times in selected cases.

The purpose of this communication is to focus attention on its shortcomings and to arouse in the minds of surgeons the necessity of finding more efficient methods. In this review of the subject, I have been impressed with the belief that more and more evidence is accumulating to the effect that there is an etiological relation between foci of infection and duodenal ulcer. Hence in conservative treatment more attention must be paid to the elimination of such foci. This must be followed up at the time of, and subsequent to surgical intervention.

It seems demonstrated that ulcers which remain active after a proper course of medicinal and dietetic treatment, should be removed to most certainly insure against their being a source of trouble. The question which my study leaves unanswered in my own mind is as to the wisest means of accomplishing this removal. Four general methods are at our disposal. 1—Excision of the ulcer either by knife or cautery. 2—The same with an added gastro-enterostomy. 3.—A pyloroplasty or gastro duodenostomy with coincident removal of the ulcer, and 4—A resection of the diseased portion of the duodenum, the pylorus, and the antrum of the stomach.

In favor the first is the well confirmed observation that many persons remain entirely well after an acute duodenal perforation, which has been treated by simple suture. Most surgeons advocate nothing more than this, unless the repair has dangerously constricted the pylorus. In non-perforating ulcers, however, the consensus of opinion is that this procedure is not efficient, and the second procedure—the addition of a gastro-enterostomy—is advocated. To this the objections to a gastro-enterostomy alone apply.

One cannot escape the conclusion that removal of the ulcer and a repair by a pyloroplasty, or a gastro-duodenostomy most nearly conforms to the sound surgical principle, that all parts shall be restored as accurately as possible to the normal at the conclusion of any operation. Unfortunately there are many cases in which this operation is extremely difficult, if not impossible, by reason of the fixity of the duodenum. Technical skill is overcoming the difficulties, and the usefulness of this method is covering a larger field.

My personal conviction is that the more radical method named under the fourth heading will occupy an increasingly large place in our work until the knowledge of etiology permits us to disregard the danger of recurrence of ulcer. To the properly trained surgeon such restrictions are not matters of great technical difficulty, and the mortality rate should not be higher than in the simpler methods. The pre-operative transfusion has given us a tremendous safeguard for these patients. They stand this operation without evidence of shock and the post-operative convalescence is always noted as particularly smooth. Its great advantage lies in the fact that it removes for all time the danger point with these patients, namely, the first portion of the duodenum and the pylorus.

The most nearly physiological repair after such resection is the Billroth I type, but it is undoubtedly true that dangerous tension may result therefrom. There seems to be little choice between the Polya and the Billroth II, and in my own work I use the method that gives the more easy and natural fall into the jejunum from the stomach stoma. The proximal end of the jejunal stoma should be toward the lesser and the distal at the greater curvature. I am very strongly impressed with the finding of Roeder[42] and others, that separate suture of the mucosae, including the muscularis mucosae of the two viscera, should be done, and with a sufficient

redundancy so that the rugae may be in evidence. Clamps should only be used where absolutely needed to prevent contamination, and not as controllers of bleeding. This permits the separate ligation of bleeding points and allows the placing of the sutures for the sole purpose of accurate union, and does not require them to be placed for the additional purpose of hemostasis, which may, because of tautness and position, prejudice their efficiency for the former. Moreover, it removes one factor in causing trauma of the mucosa.

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TRAUMATISMS OF THE HEAD*

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When we examine our medical journals published during the last decade, we find quite a dearth of articles written on this subject, and I have often wondered why it is so; certainly not because we have reached the pinnacle of treatment in that branch of surgery, neither is it because it is not a subject worthy of our best thought and study; for I regard it as being a subject of great importance, not only to the surgeon, but to the general practitioner as well, as there are but few physicians who have practiced medicine for any length of time, but have been called to treat traumatisms of the head, and every physician should be able to differentiate between cases of concussion and compression, and by so doing they will be able to direct their treatment intelligently.

During the World War surgeons were given the greatest opportunity in the world's history to observe and treat injuries of the head, and while they gained much valuable information in the treatment of these forms of injuries, we are still far from the goal, when it comes to making surgery of the head an exact science.

Traumatisms of the head are probably as old as the world. For centuries before the circulation was discovered, trephining of the skull was done for injuries of the head in different countries, as has been well demonstrated by skulls unearthed that bore the ante-mortem marks of the trephine, and yet, the surgeon of today would give all he possesses, if he could always know when, and when not to trephine an injury of the head.

How strongly are we reminded of our limited

*Read before the Section on Surgery, Illinois State Medical Society, Quincy, May 19, 1925.

knowledge in this branch of surgery when called to treat a severe emergency head injury.

What would it be worth to the surgeon, if he only possessed definite knowledge, and could say, this is a case of concussion, or a case of compression, or a case of concussion complicated with compression, or a case requiring operation, or one in which an operation is clearly contra-indicated.

I am not going to attempt to give you anything new, but simply to lay down for your guidance a few landmarks as I have found them in these forms of injuries.

The most frequent class of head injuries which the surgeon is called to treat, are the cases of concussion, and they are not dependent on fractures, but simply to a blow on the head, and in many of the fatal cases of uncomplicated concussion, autopsy fails to show any visible alteration in the brain. The force of the blow produced instantaneous death by paralysis of the vagus and vaso-motor centres.

What is the picture presented to the surgeon in uncomplicated cases of concussion? The patient is above all, unconscious, he sees, feels and hears nothing. His expression is that of one in a deep sleep, the extremities are cold, the skin is pale, and the face has a pinched expression. There is usually repeated vomiting, especially immediately following the injury, the pupils will usually contract when suddenly exposed to a bright light. One of the cardinal symptoms is deep respiratory efforts alternating with superficial and irregular breathing. The pulse becomes slow, often sinking as low as fifty or less to the minute.

Of late years I have come to divide cases of concussion into three classes. In the first class the patient lies benumbed and unconscious, and the heart does not become slow, therefore we know that only the cerebral cortex is affected and not the vasomoto centres, which allows the heart to go on working in a normal way.

In the second class of cases we know a greater degree of violence has been done, and that not only the cerebral cortex has been paralyzed, but that the vagus centres have been stimulated to increased activity.

In the third or severe forms of concussion, not only are the higher or psychical functions profoundly depressed, but also the automatic apparatus hidden in the medulla oblongata is attacked. The patient lies in the deepest coma, and in contrast with the other forms of concussion, the pulse is rapid and irregular.

When we come to analyze symptoms of concussion, we are able to extract certain underlying principles. The symptoms are produced with extraordinary suddenness, and with fullest intensity at the outset, and secondly, they diminish in intensity progressively and are transitory, and should disappear in a few hours or days. Any condition therefore which remains stationary for a long period, or grows worse, is not pure concussion, and if after a reasonable time there is no improvement, we can no longer rest our diagnosis on uncomplicated concussion, but must assume the presence of a more severe lesion.

I have seen cases of concussion complicated with contusion or extravasation of blood, lie for weeks in an unconscious state, and as soon as absorption took place they made an uneventful recovery without operation.

If we keep clearly in our minds the mental picture of concussion, it will enable us to differentiate between cases of concussion and compression. A history of the case will enable us to make a diagnosis.

Concussion is of necessity produced by the sudden impact against the head of a body in rapid motion, or vise versa, there must be a blow.

When a slow moving wagon wheel runs over a man's head and injures it, we know that it is not concussion, or when a slow moving train catches the head between the bumpers and injures it, the same thing obtains.

We should always bear in mind, that the brain is enclosed in a complete bony casing, and is entirely incapable of being compressed into any smaller compass without injuring its structure.

Here again are we greatly aided in our diagnosis by a history of the case.

When we see a patient who has only recently recovered from an attack of concussion, and after a short time begins to complain of ringing in the ears, flashes of light, headache, vomiting, restlessness, drowsiness, delirium, congestive flushings of the face increase of blood pressure with slow pulse, we know that we have to deal with a hemorrhage somewhere in the brain or meninges, because of the free interval, and the symptoms that rapidly followed.

Ninety per cent. of hemorrhages after injuries of the head are from the middle meningeal ar-

tery or some of its branches. If the hemorrhage be small, the patient may complain only of flashes of light or headache, with no focal symptoms whatever, but if more severe, there will be unconscious, delirium, vomiting, flushing of the face, slow pulse, with rapid rise of blood pressure, and if in addition, we have stertorous respirations of the Cheyne-Stokes type, the face becomes livid, and the slow pulse rapid, we know that the end is near, and that we have only a limited time in which to relieve our patient.

In know of no test for *compression* of the brain so sure as rapid rise of the blood pressure, and if possible, the surgeon should keep convenient a sphygmomanometer in order that he may take the blood pressure, as it will often rise from normal to two or three hundreds in a very short time, and is a valuable aid to diagnosis. Too great stress cannot be had on the value of an x-ray examination in practically all cases of head injury of any gravity.

I wish to discuss briefly, just what takes place in the brain in cases of compression. The cerebral cortex is the seat of consciousness, requires the greatest amount of nutrition, and is more easily disturbed than any other portion of the brain. Consciousness is lost more easily than any other function, and vice versa, returns only after the circulation has been fully restored.

As soon as compression takes place it produces an anemia of the brain by squeezing out the blood, paralyzing the cortex, and this in turn stimulates the vasomotor apparatus, which causes the blood vessels of the rest of the body to contract, and as there is no vasomotor apparatus in the cerebrum proper, it forces the blood from the rest of the body into the brain and is nature's method of restoring the circulation.

The vasomotor centers however, can only retain their stimulation for a limited time, and then the blood pressure falls, only to go up again when the vasomotor apparatus resumes its stimulation, and thus we see the life and death struggle going on between the paralyzed cortex and the vasomotor centres, and when the compression pressure exceeds that of the vasomotor centres, death occurs from paralysis of the vagus or center of respiration and circulation.

In the treatment of cases of compression of the brain, under no circumstances should the surgeon attempt to lower the blood pressure by phlebotomy, as you only lower the vital forces of an already badly shocked patient, but what is far preferable is repeated spinal puncture, using care not to draw off too much spinal fluid at one time, for the reasons given above. And as you know, when you are doing spinal punctures, you are only temporizing, only trying to bridge a crisis, but on the other hand you are opening another avenue for infection, and too, it is a very difficult matter to tell just how much of the spinal fluid you can draw off with safety to your patient.

If the compression is caused by a fragment of bone pressing on some portion of the brain, the pressure symptoms come on rapidly, and we do not have the free interval as in hemorrhage.

Practically all fragments of depressed bone should be relieved, even if they are not producing focal symptoms, for fear of the end results, and unless a depressed fragment of bone be removed by operative measures it becomes a permanent encroachment on the cavity of the skull.

All, even the most severe, symptoms of general compression may disappear as soon as the factors producing the compression are removed.

The surgeon who does brain work today is a long step in advance of the brain surgeon of a decade ago, for the reason that he has the x-ray to guide him in depressed fractures of the skull.

As long as the circulation continues regular and of good volume, there is no special cause for alarm, but a condition of deep coma with complete muscular paralysis and total loss of sensitiveness to external impression, with dilation of the pupils, and irregular deep respirations will terminate fatally unless some remedy be applied immediately.

I have seen patients recover with stupor, unconsciousness and slow pulse, even after they had continued for weeks.

The treatment of cerebral pressure consists always in the removal of the cause. Whenever possible, and when the necessary surgical interference does not involve more danger than the intracranial pressure itself, the endeavor should be made to remove the factor producing it whether it be depressed bone or extravasated blood.

Before opening the skull, we should if possible make a differential diagnosis (and the x-ray will aid us very materially in this) as cases of concussion or contusion do not call for surgical interference.

In cases of compression, if we have decided

that an operation is necessary, before opening the skull, we should if possible locate the seat of the lesion, as it will often times save extensive trephining, and subjecting an already badly shocked patient to additional shock and danger.

In order to locate the lesion, the surgeon should by all means have a fair knowledge of cerebral localization, and in the majority of instances he is able to say, whether or not the lesion is located in the frontal, parietal, temporal or occipital lobes.

When trephining has to be done in the temporal region, never divide the temporal muscles if possible to avoid it, but trephine between the fibres of the muscles, as they are a great safeguard in the prevention of hernia cerebri, especially if we have to open the dura.

Any interference above all must fulfill two indications, the arrest of the hemorrhage and the compression of the brain.

Since ninety per cent. of the hemorrhages of the brain are from the middle meningeal artery, the surgeon should have a knowledge of the location of this artery and its branches, as it will be an aid in locating the seat of the hemorrhage. Aphasia always points to an anterior hematoma. Marked facial paralysis points to frontal paralysis and below. Anesthesia or disturbance of sensation points to posterior lesion. An isolated paralysis of one arm always indicates that the lesion is in the middle portion of the central convolution or middle motor area. The leg center lies in the superior portion of the central convolution, and is rarely ever affected alone, as the branches of the middle meningeal are so small by the time it reaches that center.

Cases of mild paralysis coming on from 24 to 48 hours after an injury, as a rule are due to collections of serum or edema, and should not be trephined. Cases of hemorrhage producing only moderate pressure symptoms, do not as a rule require trephining, as they are usually absorbed in a short time. The cases in which pressure symptoms come on shortly after an injury, and the paralysis persists, should be trephined to prevent the ill effects on the nerve fibres of continued pressure, and to restore consciousness, and by that means prevent inhalation pneumonia, from which so mony unconscions patients die.

In all cases of pressure symptoms on the medulla it is imperative that trephining be done, as the bulbar centres always give out in a few days under continued pressure.

If in doubt relative to the location of the compression it is better to expose a large area of the brain, and I know of no method so good as Cushing's osteoplastic flap operation, as in that method you can expose a large area of the brain without danger of the bone dying.

To do the Cushing's osteoplastic flap operation, quickly and deftly, a small trephine, a Marion's guide and chain saw, are all that are required. Always make the arch of your flap toward the top and the base below, with the skin still attached, so it can be laid back into position when the operation is completed without danger of the bone dying. By exposing the large area, it enables the surgeon better to expose the clots and bleeding points and relieve them.

In conclusion allow me to say, that in every case of traumatism of the head we are called to treat, we should weigh well the symptoms, and use every means at our command in order to arrive at a correct diagnosis before deciding to open the skull, and should always take the conservative course, as I regard it as being the height of inconservative rashness and lack of wisdom on the part of the surgeon to open the skull of every unconscious patient with a head injury.

DISCUSSION

Dr. J. R. Harger, Chicago: I was very favorably impressed with Dr. Mitchell's discussion of the question of head injuries. He has dealt with the subject in a very rational way. When I am considering head injuries I always think of the teaching of our dear friend, Dr. Murphy. He impressed on us one thing that all injuries of the head should be considered serious and treated as a serious lesion until proved otherwise; that conservatism is all important and unless there is some definite indication from the physical findings or marked disturbance in blood pressure or circulation, that the head should not be opened, that the treatment of head injuries should be considered just as though they were injuries to some of the superficial tissues, that the patient should be put at rest until such a time as the injury has had opportunity to repair itself, whether it is slight or severe. Dr. Murphy used to say, and I think Dr. Kreuscher will bear me out, that a head injury whether there was unconsciousness or not, if the coma was of long standing or short and if there were no evidence of compression, should be treated by rest in bed for three or four weeks.

As to the method of operating and the discussion of the blood pressure I agree heartily with what Dr. Mitchell has said.

DEFECTS IN THE TONE SCALE THEIR RELATION TO POOR SPELLING AND LOSS OF MUSICAL TONE*

FRANK L. ALLOWAY, M. D.
CHAMPAIGN, ILL.

We find people who are poor spellers divided into three classes:

Those deaf from disease.

Those who are inattentive.

Those with absolute tone islands.

In this investigation we confined ourselves to those with islands in the tone scale. Of the 5,000 persons examined consisting of school children, Veterans Bureau patients and University students, 25 per cent. were poor in spelling and 30 per cent. were musically tone-deaf. The poor spellers were among the 30 per cent. of musically tone-deaf patients.

By musically tone-deaf patients we mean those who cannot memorize or carry a musical tune. These are classed together with the poor spellers because we believe the cause to be the same, even though the missing nerve ending may be in a different section of the receptive apparatus.

In spelling a word the patient very seldom failed on the vowels but on the consonants. The ears were tested by the audiometer, Galton whistles, Koenig cylinders, the monochord and the telephone connected with the high frequency oscillator.

The Koenig cylinders are bars in sets of twenty-two. They are calibrated in the musical scale according to French notation. From 8192 V. S. to 65,536 V. S. The tones arise from the longitudinal vibrations set up as they are struck with a metal hammer.

The monochord consists of a steel wire maintained at a constant tension between two uprights fixed on a riged bar. Between these uprights a movable bridge passes over a fixed scale, indicating the frequency. The tones are obtained by use of a bow or by rubbing the wire with a friction sponge.

In using the audiometer all tests seem to indicate that tone gaps may occur in any portion of the range.

In estimating hearing, we must have an estimate of the range of hearing, (quality of hearing) and the quantitative degree at each pitch. Only with such a record can one have an accurate knowledge of the degree of hearing a patient possesses. Hearing for one part of the scale may be seriously impaired while that of another part is hardly affected. Accurate results can be obtained by estimating quantitatively the hearing for simple tone at all pitches. When one remembers that the qualitative range may be estimated at from 20 D. V. to 20,000 D. V. or higher, one recognizes the wide area to be covered.

Before going into the pathology of these cases I will give a brief resume of the mechanism present in the sound-receiving apparatus of the ear.

All agree that the ear is a mechanism constructed for at least two purposes: 1. to conduct sound vibration, 2. to perceive simple, harmonic waves, (simple tones) and to resolve into their component parts, (simple harmonic waves) aerial vibrations compounded of different frequencies, (pitches) which reach the ear together and in this analysis to stimulate nerves spread out in a particular linear formation.

The middle ear which serves to conduct the sound waves, is designed to solve the mechanical problem how best to transform a motion of great amplitude and little force such as impinges on the drum, into a motion of small amplitude and great force, such as has to be communicated by the stapes to the fluid in the labyrinth. The second problem is the means by which the nerve endings are stimulated and the transformation of simple or compound sound vibrations into nerve vibrations are brought about.

If we follow a sound wave from the time it strikes the concha we shall see that it is carried along the column of air in the external auditory canal and impinges upon the tympanic membrane. This starts a molecular movement in the ossicles, which in their turn transmit this impulse to the endolymph, compressing and then rarifying it, sensations which are perceptible at various parts of Corti's organ and interpreted in the remainder of the perceptive apparatus. The impulse thus carried to its proper receptive and analytical center in the brain is there recognized as a given sound.

The organ that does the separating of the tones before they are carried to the brain, is the membrana tectoria of the cochlea. Here we find some two thousand hair-like nerves, each one of which has the power to gather sound going

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at different rates of vibration or pitch. The low tones go to the apex, while as the tones become higher they are taken up by the nerve hairs toward the base of the cochlea.

Pathology. Deficiency of hearing may be at both ends of the tone-scale or in the middle of it, but the most common cases are those that have islands or missing links in the scale.

Let us suppose that each letter of the alphabet has a separate little hair-like nerve to receive its sound with the vowels, such as A. E. I. O. U. having stronger hairs. The patient is given a word to spell. If all the nerves are working in good order the sounds are harmonious to the patient, the word spells itself by the sound, but suppose the little nerves that should receive certain consonants, such as n, or p, are not working or are absent, the word does not then have a harmonious sound to the patient. He stumbles over these consonants and fails to spell the word.

The same holds true of musical tones. If the tone scale is faulty the patient has a slurred image imparted to the brain which prevents him from forming the music picture of sound as it should be. The tune is lost.

Treatment. If it should be that the nerve hairs are not missing—but lie dormant, they may be aroused by constant practice of the missing letters or notes.

When there are real tone islands, that are gaps in the tone-scale of the cochlea, the problem is difficult. The patient must learn to use his eyes instead of his ears. By constant practice a word picture can be imparted to the brain through the eyes. Even then, the patient never knows whether his pronunciation of a word, learned through the eye, is correct or not.

DISCUSSION

Dr. Elmer L. Kenyon, Chicago: I am very sorry that I do not know much about the subject. I happen to be one of those people who have a defective ear for musical pitch, and can see the relationship very clearly of the deficiency in the capability of appreciating musical pitch to a defect in the cochlea.

I am not so clear about the spelling, however. I have always felt that spelling was a matter for the sight rather than for the hearing. I meet with all kinds of children who are unable to say elemental sounds. I meet with them all the time. I have never yet met with a child, with a normal mind, who was not capable, under instruction, of learning to talk correctly, if he had a normal speech apparatus. We all know, however, that one with a deficient capability of appreciating musical pitch cannot recover. That has been worked out by Dr. Seashore in Iowa City.

But as to spelling, I am not able to appreciate the relationship of the internal ear, the cochlea, to the spelling function. For instance, Dr. Alloway speaks of a child not being able to say "e," "o," "u," or "i," because of some defect in the tone scale. But see how complicated that would be. The sound of "i" is made up of two sounds, "ah" and "I," and there would be much difference in pitch in all probability between "ah" and "i," and, besides, there would be many overtones in the simple production of one sound. It would require a very complicated situation in the cochlea, to get a deficiency applying to any particular compound vowel.

Now, as to spelling, we do not begin to spell until we have begun to write. What relationship can a defective cochlea have to such a word as "though?" The sounds in this word are "th" and "o," and the spelling is "t-h-o-u-g-h." The spelling has but little relationship to the sounds in many words of the English language. Spelling is little more than a matter of learning through the sight of how and what letters we put into a particular word. In a language where the pronunciation is phonetic, where we spell as we pronounce, there would be more consistency in the idea that deficiency in spelling might be due in some degree to the cochlea.

I personally have been very cognizant of my own deficiency with respect to musical pitch, but I have not been known as having any particular deficiency in spelling.

Dr. Louis Ostrom, Rock Island: Dr. Hayden is here, and I want to speak of two boys of mine. He can vouchsafe what I say.

One of my boys, and I have a lot of them, is a musical genius. He has absolute pitch. The two of them are in the Culver Military Academy. This one has absolute pitch, a phenomenal memory, and when he was ten or twelve was rated by Sousa and men of that type as the most phenomenal that they had ever met. From the time he was just four or five he has put in from three and four to ten hours a day at his music. It was just natural. It was just the same with him as eating, sleeping and everything else. It never was an effort on his part or anything else. By the time he was twelve or thirteen, he was as far along as it was almost humanly possible to be.

During this time, of course, the other boys were reading, spelling, etc., while this boy was in his music all the time. He could neither spell, read nor write.

I mention this because most artists or musicians, if you go back to their progenitors, you will find their fathers were preachers or doctors. You see many doctors whose children are unusually musical. Now this boy had unusual talent of that kind. By the time this boy was fourteen he had entered Culver Military Academy. He had his credits for the second year horizontal. When he started in his geometry, he wanted to know what all these lines in geometry meant. In other words, he didn't comprehend anything. He had his algebra and he had no idea what that was for. They started him way back around

the 6th or 7th grade. Now he is getting all the rest of the studies.

Now, I had another boy at Culver who was absolutely devoid of any musical pitch. He couldn't tell the pitch of any tone nor did he have any sense of rhythm. We started in with him the same way.

Now the clarinet is perhaps the best instrument for anything of that kind. The clarinet has the most perfect tone. In transmitting over the radio, for instance, it will transmit better than any other instrument because of its wonderful over-tones. It is next to the human voice when it comes to perfect tones and the over-tones that make musical tones. I started him on the clarinet. Because he was absolutely devoid of pitch, I had a piano that was tuned absolutely perfect at frequent intervals, and I would spend hours of the day to make him blow in tune, and I kept on and kept on, and in about four years of that work he got so that he could tell one tone from another, and I tried to have him see the quality of the tones. Whether he made this kind of squawk or that kind, it sounded all the same to him, and after four years I gradually developed it. On the other hand, he was consistent in books, and he could spell and read everything. But he had no musical talent.

At the end of six years he entered Culver. It took five years to get any sense of rhythm into him. Now after nine years he is master of the clarinet.

When it comes to matters of that kind in spelling it is far-fetched with this other boy. He paid no attention to words or the sound of anything. It was all a blank in there, because he didn't train that center up in the head rather than in the ear.

There are two types of two brothers, only a year and a half apart, entirely different.

Dr. Alloway (closing): Dr. Kenyon admits from the start that he knows nothing whatever about the subject, and I think I can eliminate all of his ideas. But he says that he thinks that spelling is due to the eye.

I visited in Iowa the School for the Blind, where there are some brilliant spellers. I know full well that they never received any of these letters or the sounds of letters through the eye, which knocks that out.

Now, then, take a word like "though," the very word I had on my paper here, and I expected somebody to bring that up on account of a difference in the slurring over of those tones.

It is the business of the ear to separate these tones out and to find where they belong. There's two thousand little hairs hanging down in there to take up these tones and figure them out and to send them to the proper center. If the nerves are dormant and don't take up these sounds, the patient is dumb and does not receive these things in the center, although the center in the brain may be perfect. When sounds are transmitted properly they take no effect.

We have a range of eight octaves in the human voice, and that is all that it is necessary to take up. There is a different place where the musical tones are received than where spelling is received. It is thought by Bunch, and I think it is C. W. Hewlett, of Iowa, that these musical tones are further towards the apex and that the spelling tones for consonants are further down towards the middle.

Dr. H. B. Young, of Burlington: He may not distinguish between ordinary words and phonetic words.

Dr. Alloway: That is where education comes in. Spelling in our language is absolutely wrong in lots of cases. That is, the way it is received in the ear "tho" and the end "ough" that is added should not be there.

Dr. C. M. Robertson, Chicago: How do you account for the fact that most all of the graduates of Harvard and Yale are unable to spell anything?

Dr. Alloway: Are you from there, doctor? We find around Boston that the tones are so peculiar and hightoned that the ear is unable to grasp such high class stuff.

CHOLESTEATOMA INVOLVING THE ETHMOIDAL CELLS AND THE ANTRUM OF HIGHMORE*

G. C. Otrich, M. D., F. A. C. S.
BELLEVILLE, ILL.

The diagnosis of the condition which I am about to report will undoubtedly be questioned. I questioned it myself for some time—called it cholesteatoma or caseous metamorphosis. By some authors these are divided into the true cholesteatoma and the secondary from the diseased mucous membrane of nose or accessory sinuses. There being such a wide difference of opinion, I will not burden you with details of difference, but will give you the gross facts as I found them.

Mr. P. R., aged 60 years, farmer:

Referred for relief of nasal obstruction, right nostril.

Previous history: Slight attack of flu ten years ago. Called on family physician for relief of nasal obstruction eighteen months ago; was given antiseptic douche and oil. About one year ago noticed slight yellow discharge which was very fetid. Claims never to have had headache in his life, and been in perfect health otherwise.

Examination findings:

Two sebaceous cysts on scalp, posterior parietal region, slight bulging of ascending process of supmaxillary and lacrimal bone.

Intra-nasal findings:

Left side normal; right side a slight yellowish mucopurulent discharge, very fetid. Inferior turbinate showing no noticeable changes. The middle turbinate had the typical appearance of polypoid hypertropic condition, boggy to touch but no perceptible shrinking with the application of adrenalin or cocain. Post-nasal examination: the nasal space was completely obstructed.

My pre-operative diagnosis was chronic hypert.ophy

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of middle turbinate, secondary to chronic ethmoid disease. I prepared to amputate the anterior end of the middle turbinate for further investigation, when I snipped it I met no bony resistance, a cheesy material began to ooze out, and the further I proceeded, the more caseous material I encountered. When the turbinate was completely removed, it was found that the bony structure was completely destroyed.

Exploration of the ethmoids with a sound, was like passing it through cheese, no bony resistance till the ethmoid orbital plate. I used a dull large sized curette and began scooping out this material, then sounding for the superior antral wall. I found there was none. I then introduced a trocar via the meatus with scarcely any perceptible bony resistance; irrigation was then done, with very little pressure because of the bony destruction that I know now had taken place. This brought forth large amounts of the cheesy material. After thorough irrigation, inspection of the field of operation showed one of the most complete jobs of destruction you can imagine, there being nothing left but the lateral walls of the antrum and the ethmoids. The frontal and sphenoid had not been involved, and showed no signs of an inflammatory process. Not considering the importance of the case I did not instruct the nurse to save a specimen of the material removed, till after the operation was finished, but she had destroyed everything, therefore I am without a pathological report. It is impossible to say to what type this case belongs. Whether there is any relation between the large sebaceous cysts on his head, and this condition I do not know, but his mother and brother also had large cysts on their heads. Some authorities would associate these histories and call this a true cholesteatoma.

DISCUSSION

Dr. Louis Ostrom, Rock Island: It is rather unsatisfactory to discuss this subject because so little has been written on the subject from our standpoint. A lot has been written from an oral standpoint, particularly in Germany. I made some effort to look up some of this matter rather for my own information than to give it to you.

As the doctor stated, there are two classes of true cholesteatoma. Recently in our A. M. A. journal a cholesteatoma of the cecum was reported, perhaps the only one reported, of true tumor.

These tumors are found commonly in the brain, in the meninges, the spinal cord, the cranial bones. Some have been reported in the frontal sinus, which raises the question whether it is a true cholesteatoma. The doctor closed in saying it was a true tumor.

A true tumor of the cholesteatoma type must be encased in this epithelial lining and then a macerated mass of broken-down epithelial tissue inside containing cholesterin crystals. That makes a true tumor.

Now, on the other hand, we have a chronic necrotic inflammation which may cause a transformation of the normal epithelial covering producing the characteristics of a cholesteatoma tumor, just as are found in the ear, the urinary passages, the gall gladder, mammary glands and uterus and, as reported by the doctor, in the antrum which, however, undoubtedly has another origin.

Destructive subacute apical or alveolar abscesses with sinus formation are called in Germany granuloma with lumen, and they have made very extensive studies on such structures where granular tissue forms around these necrotic areas, and this may persist and discharge into the antrum or into the mouth.

The granular tissue first shows a large infiltration of polymorphonuclear leucocytes and later areas of necrosis in the center by pressure. Later the pus may be absorbed, the leucocyte infiltration stopped and the lumen remain containing this necrotic tissue.

In these old conditions retrogade conditions may continue with formation of cholesterin crystals making the cholesteatoma.

Without the cholesterin crystals present, I don't think any of this cheesy material or any such mass can be classed as cholesteatoma.

I found no reference in oral surgery literature to the sphenoid sinus nor to the frontal sinus. In other words, it does not pass up nor does it go back. It can not jump over the pharynx and get into the sphenoid, and it does not jump up into the frontal sinus, but by extension directly from the alveolar process and apparently invades the antrum and the ethmoid cells.

So undoubtedly what he had was this inflammatory cholesteatoma and what we call a true cholesteatoma, which is epidermoid, is a new growth entirely from some displaced embryonic epithelial rests.

Dr. A. B. Middleton, Pontiac: I would like to ask a couple of questions. Did the patient show any symptoms of spinal or brain tumor? Is the patient still living?

Dr. Austin A. Hayden, Chicago: A number of years ago I saw what I believed was a true cholesteatoma of the frontal sinus, but the history of it was quite different from the history of the case that the doctor recites. This was on the service of Dr. Beman Douglas when I was an interne in New York city at the Post-Graduate Hospital, and it occurred after a Killian operation. The operation had been done several years, I think two or three years, before the man came with this protrusion over the eye, and the cholesterin crystals were found and the real cheesy matter with the characteristic odor.

Speaking about granuloma with lumen, just recently a very unusual antrum came to my attention, the case of a nurse in Chicago that had about two months ago an upper molar tooth removed, and the socket did not heal, and some foul-smelling pus during the last few days had begun to exude from that tooth socket. Strangely enough, the x-ray picture showed only a very slight difference in the density of bone between the involved and the uninvolved side. There was absolutely no pus in the nose on the involved side. There was, however, this pus coming out of this tooth socket, which the dentist had been treating.

Now, we opened that antrum and did a modified Caldwell-Luck operation, and the antrum was half filled with a pus that was partially cheesy in consistency and the rest of it was very thick, but the nose itself

was absolutely free from pus, signifying that the normal opening of the antrum was entirely closed. I did not regard that as a cholesteatoma.

I think a true cholesteatoma is the one in which the epithelial tissue becomes macerated and decomposed in the cavity which is contiguous but clean, and consequently cannot grow in the antrum or in the ethmoid.

The fact that this woman's nose was absolutely free from pus was very interesting.

Dr. Chas. M. Robertson, Chicago: The only condition in which you could have a cholesteatoma in the antrum without an invasion of the epithelium from the external world would be a case of embryonic epithelium. As that is always the character of a true cholesteatoma.

It is rather a false cholesteatoma where this cheesy matter forms. Cholesteatoma grows like an onion from the formation of epithelial layers. It extends and extends with this cheesy material in between the layers and cholesterin crystals.

Dr. Hayden: I think the term "granuloma with lumen" expresses that very exactly.

Dr. Otrich (closing): As I said in the beginning, the reason for presenting of this paper was the rarity of the conditions found and I am sorry that I did not get a pathological specimen.

Calling your attention again to the original paper I mentioned these cysts on the patient's head, also the cysts his mother had and also the cysts that his uncle or her brother had on the scalp. Whether that had any relation, I cannot say. The patient is living and is in perfect health.

I had talked this over with a couple of the doctors from St. Louis, and I irrigated the antrum again and centrifuged the washing and had the pathologist go over it. But Nature had made too complete an operation. It was one of the cleanest fields you ever saw. There wasn't a cell left. It was just a complete, rounded-out cavity with only lateral walls. I passed a pharyngoscope into the cavity to verify my findings. It was one of the completest operations I ever saw. I don't mean from my standpoint. I mean that Nature had destroyed everything so completely that it was absolutely a complete job.

I appreciate the efforts of the gentlemen in giving us some information on this subject. That is what I brought it up for, not from what I was to give you, but from what I could gain from the rest of you.

AMBULANT TREATMENT FOR HERNIAE*

G. A. McDONALD, M. D.
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In considering the injection treatment of herniae I refer to the use of medicines and not to paraffine.

The treatment of herniae by ambulant methods includes the injection into the hernial opening of such drugs as will set up a hyperemic condition with plastic exudate and adhesions to close the opening or canal. The proper fitting of a good and sufficient truss is an important part of the treatment. This treatment has been used in this country for about seventy-five years. I have never heard of its being used in any foreign country. Here it has not made much progress as far as the medical profession is concerned. This has not been from any fault of the treatment as a curative measure but rather by the position assumed by those who have used it, on the one hand, and those who are opposed or indifferent on the other. Those who have made a success of the treatment have gained their knowledge and experience under difficulties through their own efforts and when they have achieved some success they have not been in a state of mind to undertake to spread this information among those who have either persistently knocked the business or been indifferent. So in this state of antagonism and indifference and a lack of cooperation this treatment has not received the consideration to which it is entitled. This, I think, has been unfortunate both for the physician and his patients.

The number of ruptured people in this country runs into the millions, and it is a lamentable fact that no other affliction of equal importance has received so little attention. A poor truss poorly fitted and an operation constitute the service rendered and the advice given when one of these patients applies for medical help. Only a fraction of one per cent of the ruptured people are ever operated upon and many of these only in the most extreme cases of great necessity. Most ruptured people would not undergo a cutting operation if it were offered gratis. Many would be treated by the ambulant treatment if their physicians would so advise. In this progressive age we ought not to overlook any of the modalities by which disease or affliction can be prevented, mitigated or cured. We owe that to ourselves and to our patients. The injection treatment of herniae is a virgin field for the specialist. In every city of 10,000 or more people there is room for one. The business is clean, ethical, successful, remunerative and there is no competition as in nearly every other specialty.

The *Medical Council*, of Philadelphia, some twenty-five years ago, in publishing an article upon this subject by Dr. Souder of that city,

*Read before the Section of Medicine, Illinois State Medical Society, Quincy, May 20, 1925.

took occasion to state that the editor had personally investigated cases treated by Dr. Souder extending over a period of twenty years and that he considered the treatment superior to the cutting operation. My experience during the last twenty-five years confirms that belief.

This treatment in competent hands will cure ninety per cent of the cases as they present themselves for treatment. Most of the other ten per cent can be greatly benefited. This statement applies to all herniae mentioned in this paper except those following a cutting operation and incarcerated herniae.

This treatment is not dangerous, is applicable to all ages, causes little or no pain and can be given without the patient losing any time from his regular business or employment. Most cases will get well in two or three months' time. Eight treatments given at intervals of one week will cure the ordinary case. Some bad cases and some who do not get along well will require much more. Occasionally a case will get well in an adult with three or four treatments. In young children five treatments given one month apart will cure. All cases in children can be cured. In fact, a well-fitted truss constantly worn will cure most of them without further treatment of any kind. Also many cases in adults can be cured by the truss alone. I mean by this a well fitted truss, one specially adapted to the case under consideration and not just any truss the patient may select himself from a mail order house. There will be some relapses under this treatment, but the treatment has not hurt their case and they can be treated just as well again as at first. Under the cutting operation there are many relapses and all are worse off than before and a less prospect of being cured by a second operation than by the first one.

Etiology: Rupture occurs from infancy to old age. Is no respector of person, trade, profession or calling. No class is exempt. It occurs most frequently during the physically active period of life, from twenty to fifty years of age. Predisposing causes are a natural weakness at the internal ring and the posterior wall of the inguinal canal and at the femoral canal and the umbilicus. A hereditary tendency seems to be exemplified in some cases. I base this statement upon the observation of many cases in boys whose fathers were ruptured. In several cases that have come under my observation the father and two, three or four sons were all ruptured. The fact that man is an upright animal is also a predisposing cause. The exciting causes are relaxation of muscles from lack of exercise, mostly in the aged, physical strains upon the abdominal contents such as coughing, sneezing, straining at stool, lifting heavy objects, jumping, falls, and in women pregnancy, etc. These are the principal causes.

Varieties: This treatment is applicable to and I will discuss the following varieties in the order of their frequency, viz.: Indirect inguinal, direct inguinal, those following abdominal operations, umbilical and femoral. Reducible herniae only are amenable to this treatment.

Diagnosis: Indirect inguinal hernia leaves the abdominal cavity through the internal ring and follows the course of the inguinal canal into the scrotum.

Direct inguinal hernia breaks through the posterior wall of the inguinal canal and does not descend into the scrotum, but appears as a globular mass above the pubic bone. For the purpose of this treatment it is not necessary to distinguish between these two varieties. The same method of treatment applies to both. Reduce the hernia, hold it back with the hand, and with the patient standing remove the fingers from below upward; the point at which the hernia appears is the internal opening. If this is at the internal ring the hernia is indirect, if below the ring, direct. In old and large hernia the posterior wall may be dragged down until the internal ring is opposite the external. This is only important in operating for strangulation. Invaginate the scrotum upon the forefinger of the right hand, push the finger up through the external ring. As it enters the canal it will dip down behind the bone if the hernia is direct. In some fat people the external ring cannot be reached in this manner. In thin persons the internal ring can be located with the point of the finger pressed under the border of the external oblique.

A femoral hernia descends through the crural canal and lies in proximity to the external border of the femoral artery. Hernia following a cutting operation and umbilical hernia cannot easily be mistaken for anything else.

Differential Diagnosis: Inguinal and femoral herniae are the only ones likely to be mistaken for any other pathological condition. Un-

descended testicle, hydrocele of the cord or tunic, enlarged inguinal gland, and varicocele are the conditions most often mistaken for herniae. Examine the scrotum. If one or both testicles are absent they may be lodged in the inguinal canal. An undescended testicle, hydrocele of the cord and enlarged inguinal gland cannot be reduced, give no impulse on coughing and previous history is important. The aspirating needle will make a positive diagnosis of hydrocele and enlarged inguinal gland containing pus. In case of infected gland the source of the infection may be found. Hydrocele of the tunic may be differentiated from hernia by reflected light. The hydrocele is translucent and the hernia opaque. Hydrocele has a history of slow growth. Varicocele occurs most frequently on the left side, feels like a bundle of cords with the patient standing and becomes collapsed with the patient lying down. On rising it fills up from the bottom.

Inguinal hernia occurs much more frequently in males than in females. Is three times more frequent on the right side than on the left. The indirect inguinal herniae outnumbers all other kinds combined. Umbilical herniae occurs most frequently in infancy and next in women during pregnancy; seldom occurs in the adult male except in corpulency. Femoral herniae are much more frequent in women than in men.

Trusses and how to fit them: Trusses are of many kinds, good, bad and indifferent. Few are made along anatomical lines but the great majority being made to sell are constructed in such manner as will best appeal to the truss buying public. A good truss should completely hold the hernia to which it is applied regardless of the occupation of the patient or the position which the body may assume. It should be easily worn without discomfort or undue pressure upon the surrounding parts. Should be made of such material as will conform to the shape of the body. Should fasten in front and have an easy and uniform pressure around the hips. The counter pressure should come upon the gluteal region from behind.

Trusses are made of malleable wire and spring steel covered with leather and from web elastic. The best truss is made from malleable wire and the poorest from web elastic. The pressure upon the rupture from an elastic truss comes entirely from the thickness of the pad. The counter pressure encircles the entire body. The constant pressure of this elastic band around the body interferes with the circulation in the skin and subcutaneous tissues. It is not infrequent to find these tissues together with the muscles beneath greatly atrophied. The elastic has too much tension when new and not enough when old. They are insanitary and cannot be easily cleaned. They are frequently sold at an exorbitant price, on the pretense of being possessed with some miraculous power to cure. To read the ads of some of the mail order truss houses one might be lead to believe that their particular truss was endowed with brains and belonged to the Mrs. Eddy school of healing. There is no one other thing by which the ruptured people are so mulcted as by the purchase of cheap elastic trusses at a big price. There are millions of these trusses sold every year to a credulous and helpless people. The doctor ought to be in a position to give this class of patients sound advice in the matter but he usually is not, I am sorry to say.

The spring steel truss is better than the elastic and when it fits well many of them are all right. The great trouble with them is that they cannot be shaped to the body. The body must fit them. They admit of very little adjustment.

The best truss made is of malleable wire. It can be bent and easily shaped to conform to the various physiques. The pressure over the hernia can be regulated by adjusting the tension of the wire and the counter pressure can all be applied in the proper place behind.

The pad is a very important part of the truss. Here the ingenuity of the truss maker has been exhausted in his effort to make something different. The shape of the pad should depend upon the particular rupture to which it is applied. Take for instance an inguinal hernia. If the hernia is direct and the posterior wall of the inguinal canal is intact the pad should be a half globe fitted over the internal ring. If the patient is of medium size and build the pad need not be large. If the patient is fat with a heavy belly he will need an extra deep pad, and if the patient is poor and scrawny a flat pad covering more surface will be needed. The common femoral hernia needs a small pad about half as thick as long or wide. An inguinal pad should never press against or upon the public bone. Many of the mail order trusses have this defect. The

laity all think every inguinal hernia comes out close over the bone and these long pads coming down over the bone and pressing upon the spermatic cord and vessels are made to fill this demand among the millions who buy and fit their own trusses. Much more could be said upon this subject but I leave it here.

The Injection treatment. After a properly fitted truss has been applied it should be worn day and night until the hernial opening is closed so the hernia will not come out when the truss is removed. It then should be continued for from six months to a year. After the hernial opening is once closed the rupture will not come down again if proper protection is given until the muscles and tissues around the hernial opening recover their natural resistance. In some cases the truss should be worn indefinitely.

The medicines used vary with the operator. The particular prescription is not so important as the skill of the doctor in using it and in the general management of the case. The drugs are all of an escharotic or astringent nature. Principle among which are zinc sulphate, zinc sulphocarbolate, quebracho, iodine, Lloyd's tincture of thuja and calendula, sulpho-tannate of copper, creosote, potassium permanganate, guiacol, hamamelis, etc. The medicine is injected into the hernial opening with a hypodermic or aspirating needle. The length of the needle will depend upon the thickness of the coverings of the hernia and will vary from the common hypodermic to one three inches long.

It is not possible in a paper of this kind to go into minute detail covering the whole range of the subject. I have endeavored to discuss the matter in a way to give a general idea from which anyone interested can make a start and pursue the study to his own pleasure.

In the March and April numbers of the 1905 *Medical Council* of Philadelphia, can be found a more exhaustive discussion of this subject, being a paper which I read before the Wayne County Medical Society in January of the same year. In that paper are published the various prescriptions used by most of the specialists at that time. There has been nothing new in particular during the last twenty years. I think the limit of efficiency of the treatment has been reached. If any legitimate objection can be raised against it or any defect exposed I am free to acknowledge that I do not know what they are. I am not looking for any other improvements. When an old hernia of twenty-five years or more standing can be cured in two months without the patient being incapacitated from attending to his regular employment or suffering any inconvenience or assuming any risk I cannot see what more could be expected or desired.

In treating herniae by this method we are simply duplicating what has always been going on in the human male. When the testicle descends into the scrotum in the embryo it carries before it an invaginated fold of peritoneum as its inner covering. When the testicle reaches the scrotum nature closes by firm adhesions the peritoneal opening behind it. Nature is thus daily in multiplied thousands of cases performing an operation which man can easily duplicate but he has mostly refused to take the cue. Not only does this closure of a peritoneal sack occur in the embryo but spontaneous cures frequently occur in old cases of hernia by the same process.

CASE REPORTS

S. G. H., laborer, aged 32 years. Treated in 1902. Right inguinal hernia since twelve years of age. Hernia had never been retained with a truss. About the size of a man's fist. Treated once a week for eight weeks. Rupture never came down after fitting a truss. This man worked while being treated at clearing land and digging a ditch. Recently reported that he never had any trouble since treatment.

P. W. P., section hand, aged 23 years. Treated in 1909. Right indirect inguinal hernia from birth. Worked on section while being treated. Cured in eight treatments. After taking six treatments he took off his truss and went before a railroad surgeon for examination as brakeman. Passed the examination and was soon running a train. This case reported several years later as all right.

Mrs. C. A., aged 38 years. Ruptured on left side twelve years. Cured with eight treatments. Treated in 1910. No trouble up to present time.

Miss P., aged 15 years. Treated fifteen years ago. Got well with six treatments. Recent report that she is married and has a family. No trouble from rupture since treatment.

R. W., aged 18 months. Ruptured about six months. Cured with five treatments given one month apart.

J. Q., age 86 years. Civil war veteran. Ruptured shortly after coming out of the army sixty years ago. Cured in two months' time with frequent treatments, one every two or three days.

C. G. S., farmer, aged 35 years. Double inguinal rupture, fifteen years on one side and more recently on other. Right rupture about the size of a large grapefruit. Given numerous treatments extending over four months time. Cured.

G. F. R., farmer. Right femoral. Five years' standing. Cured with four treatments given at weekly intervals.

L. M. C., aged 4 years. Ruptured from infancy. Cured with five treatments fifteen years ago.

W. H. C., aged 40 years. Right inguinal hernia from birth. Cured with six treatments in 1906. At last report ten years later still well.

Mrs. R. H. P., aged 23 years. Left inguinal hernia for two years. Given six treatments in 1911. No trouble since.

W. R. L., aged 30 years. Double rupture from birth. Butcher. Given eight treatments. Cured, 1909.

W. J. S. Left inguinal, indirect. Scrotum ten inches long and 18 in circumference. Cured with eight treatments. Hernia never came down after being fitted with truss. This gentleman was a Presbyterian minister and reported after several years from Arizona that he had no trouble after treatment.

I believe this number of cases will give you a fair idea of what may be expected from this treatment.

ANNUAL ADDRESS*

A. P. ROBERTSON, M. D.
President of Madison County Medical Society
ALTON, ILL.

The inspirations of a moment such as this are manifold. All great art represents something that it sees or believes in. How true is this of medicine! It sees what is actually accomplished—and more—what is intended; it believes in what is to be done. It is difficult to conceive of medicine without the vision and without the faith, whereby the people may not perish and confidence may not be removed from the earth.

Above all men, the physician needs the philosophical spirit, the worship of wisdom, the love of learning. Upon these attributes is founded the cool, rational and temperate judgment, combined with the desire to search into the reason and nature of things, which are so essential in the physician's make-up.

The art of medicine is as old as the need of mankind for relief from injury and disease. The science of medicine has been a gradual growth founded upon organized knowledge gained by experience in its practice. Not all the best work in medicine is accomplished by the busiest or the most widely-known practitioners. In the words of Havelock Ellis, "Where there is most labor there is not always most life, and by doing less, provided only he has known how to do it well, the artists may achieve more." To apply this statement would be to say that the physician who counts is not always the one who is doing the most work, but the one who is doing the most of the best work.

Medicine is a profession that can use all the resources of a man as no other profession can. It trains all the powers and all the senses. A physician's eye cannot be too keen, nor his analytical powers too well trained. If human happiness consists, to a considerable extent, in our ability to use, not only one or two of our powers but all of them, then surely one of the greatest rewards of medicine is that not only our brains, but our senses, our muscles, and our co-ordinations, can be put at the service of our patients and made of value in our professional work.

If anything will arouse interest in the pursuit of truth, it is the practice of medicine. The physician is actually forced to take an interest in what he learns from day to day from the bodies and souls of men. He cannot escape being drawn out of the field of purely practical interest into the impersonal pursuit of truth.

The physician of tomorrow must know humanity as well as human anatomy and physiology. He must be trained in the pathology of social conditions as well as in disease processes. He must be as expert in human relationships as in the habits of man's microscopic foes.

The human unit and its reactions are now emphasized everywhere in life—in science, in business, and in politics. The salesman studies the mentality of his prospect; the librarian, the minds of the community. In the same way, the physician, who formerly devoted his time to diseases, now focuses his attention on patients.

Two persons, exposed to the same morbid conditions, will not react in the same manner. Possibly these will be fatal to one while another will escape entirely. Defensive mechanism which has been elaborated in one man may be totally absent in another. The modern physician believes that these peculiarities of the patient are in many cases of more importance than the disease.

No scientist, whether he is a physician or a farmer, believes that the knowledge which he has is absolute. He is ready to admit that what he regards as truth today may, in the light of future discovery, be radically changed tomorrow. He believes that the biologist, following the method of the chemist and physicist, but working with

*Address before Madison County Medical Society at Alton State Hospital, June 5, 1925.

microscopic forms of life, as well as with larger forms, comes nearer to the truth than he who relies upon a mystic feeling for what is "right" or "natural." He believes that the soundness or reliability of a proposed plan of action can be determined only by practical demonstration, not by appeal to popular opinion or by its seeming reasonableness. He believes that the physician who has gone through six years of training in the principles of anatomy, biology, and physiology is better fitted to deal with the human body when it is in difficulty or distress than is the man who has gone through merely six months of training in a school which does not recognize the necessity of thorough training in these fundamentals.

In view of the extensive applications of science, upon which we literally sustain our daily life, it is safe to assume that most people do accept the scientific method. And yet, although the teaching of the sciences has gone forward at an increasing rate with every passing decade, we find in this country today a large number of persons who manifest a growing dissatisfaction with the scientific schools of thought. In the matter of health and disease, more and more people seem to be going over to the side of the pseudoscientist, the chiropractor, the neuropathist, the antivivisectionist, the antivaccinationist, and others.

The reason is not far to seek. It is found in the failure of scientific men to realize the necessity of defending their purposes and methods against the attacks of unscientific people of various kinds who appeal to the public through propaganda and special pleading. The scientists have for the most part been content to let facts speak for themselves.

But in the struggle between knowledge and ignorance, science and superstition, medicine has, and must always continue to lead the way, and you as its standard bearers are serving your communities with intelligence, industry and integrity.

Not alone is it necessary to obtain the interest of men of sound preparation and broad vision for the development of medical science, but it is equally necessary to educate the public up to the point of understanding that just as in the case of astronomy, or of physics, or of chemistry, it is only by the diligent employment of the scientific method that progress is possible; that by that method alone will an understanding ever be gained of the manner in which the body functions in health and disease.

BIOLOGY OF THE DUCTLESS GLANDS

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DE KALB, ILLINOIS

I do not want you to think that I am going to review your biology for you. I am not; I couldn't if I wanted to, for it has been a long time since I studied biology from the text-books. But I do want to refer, briefly, to what seems to be a certain and definite relation between life in embryo, the subsequent development of some of the structures of the body, with special reference to the glands of internal secretion, called ductless glands, and their effect upon the individual, for by so doing we want to lay the foundation for what is to follow.

We will begin with the fertilized egg, or ovum, as it is called in medical works, concerning which Prof. Montgomery has already talked to you. We could go back farther and discuss the internal secretions and metabolism of the lowest form of life, the ameba, a life composed of a single cell, and show the physical and chemical interpretation of embryonal development, the embryonic layers of membrane and their respective roles in the evolution of the organism, but this is not necessary for our purpose. It has been explained to you that the ovum, or fertilized egg, develops into three layers of membrane: the inner layer is called the entoderm; the outer layer is called the ectoderm; and from these two layers of the primitive embryo is derived a third layer called the mesoderm. Now, this third layer, or mesoderm, gives rise to the primitive kidney, or the excretory organ of the embryo, called the Wolffian Body. The mesoderm also develops into the connective-tissue structures, the bones, muscles, organs of excretion and the internal genitals. It has but very little to do with our discussion, except that it gives off small movable lymph cells that are mere accessories to the thymus gland, of which we will speak later in discussing the thymus.

From the entoderm we get all the glands of the digestive system, including the lungs, thyroid, thymus and probably the anterior pituitary; for the anterior pituitary is an unfolding in embryo

*Read before the Class in Biology at the State Teachers College at De Kalb, Ill., Aug. 19, 1925.

from the upper part of the oral cavity. From the ectoderm we have the nerve and blood supply to the skin and glands. From the ectoderm we also get an unfolding of the central nervous system which becomes the brain and the spinal cord. We will now leave the embryonal development and take up the life of the child in the pre-adolescent stage.

What we mean by a ductless gland is one that does not have an outlet for its secretion through a duct, or a little tubule that leads from the gland itself into a different part of the body. It depends entirely upon the blood permeating the gland for the distribution of its secretion by the blood throughout the body. There are quite a number of ductless glands in the human body, but we have to deal with only four of them: the pituitary, thyroid, adrenals and thymus.

First, the pituitary. This gland is located at the base of the brain in a bony cavity called the sella turcica, in the back part of the sphenoid bone. It is composed of two lobes, a posterior and an anterior; each lobe has a different origin in the embryo and, consequently, a different action. The anterior lobe has its origin in the upward involution of the entoderm from the oral cavity. The main function of the anterior lobe is to govern mentality and control the growth of long bones. Any discrepancy in the function of this gland has its effect upon the individual according to whether the secretion is limited or is secreted in an over amount. A limited secretion in any gland is known as a hypo-condition; an oversecretion is known as a hyper-condition, and they both result in certain characteristics, indicating certain conditions that are just the opposite of each other.

A limited secretion of the anterior pituitary, or a hypo-condition, results in an increase of deposits of fat in the young, which later in life may become a serious obesity. There is an abnormal desire for sweets; lassitude, torpidity and drowsiness are often the first signs of this condition; the stature is small and the skeletal growth is stunted; the fingers are tapered and shortened; usually the hands and feet are small; they are dull, apathetic, backward in their studies and easily discouraged; they lack self-reliance and self-control; the head is often small and the face unintelligent; the distance between the eyes is narrowed; the teeth are malformed and broad; there are usually spaces between the teeth; the skin is dry and soft and wrinkles on the backs of the hands; they sweat but little even in hot weather; the circulation is poor; the extremities are cold, and it is claimed that this hypo-pituitary condition predisposes to epilepsy.

On the other hand, if we have a hyper-secretion of the anterior pituitary we have an entirely different type of child. They are tall, strong and muscular for their age; their skin is thick; they have large hands and feet; hair grows on the hands, chest and legs; they have a prominent nose, square lower jaw and bushy eyebrows; this type is sagacious, intelligent, self-willed, self-controlled and prudent; they may go to sordid calculations; the teeth are broad and large, especially the central incisors; they are mentally bright and have no trouble in their school work.

The posterior lobe of the pituitary has its origin in a downward protrusion from the brain. It does not give off a secretion, but sends nerve fibers to the third ventricle of the brain and the spinal cord. It acts as a stimulant to the sympathetic nervous system. We find the posterior lobe very active in musicians, singers, actors and poets.

The next one we will take up is the thyroid, which has its origin in the entoderm. In the embryo it is provided with a duct which finally separates from the main body of the organ. The thyroid is found in all vertebrates. It arises at the anterior end of the tongue as a slight pouch. As it deepens it becomes a bi-lobed mass and migrates down the neck. Connective tissue extends into its substance dividing it into a network of cords and later into follicles. From these descriptions you can readily see that these glands are under development before birth and they begin to get active on their own accord as soon as the child is born.

As in the pituitary, we may have a hypo- or hyper-secretion of the thyroid; and, as in the pituitary, different characteristics are found accordingly. In hypo-thyroidism we have puffiness of the face; chilliness and fatigue; obstinate constipation; slow movements, slow pulse, slow ideas and slow speech; whining; sleepy; the outer third of the eyebrows fall out; loss of memory; plumpness; loss of hair; soft and flabby fat. If this condition is well marked in the child it is a condition known as cretinism. In this state all of the conditions are exaggerated. In the

very young the hearing is absent and the pupils of the eyes do not react to light. Sometimes the tongue is large for its mouth and it hangs out over the lower lip; the hair is dry and harsh; the skin is dry and peels off; in mentality it has all the earmarks of an idiot. If this condition is not relieved, either by glandular treatment, or by the thyroid coming into activity of its own accord, it will grow into a condition known as myxedema, which presents a picture later in life of a fat, silly child with a very low grade of mentality. These conditions can be relieved by glandular treatment and in a very short time they develop into quite a different personality.

In the hyper-thyroid type we have quite a different picture. They are live wires, full of vim, vigor and vitality, but of unstable nature; they bubble over with enthusiasm; they have a magnetic personality and are the center of attraction; they are very impulsive, free with their plaudits as well as their censure; they make friends easily and lose them as easy; in children they are subject to tantrums; in adults they are subject to brain storms; they often have attacks of loss of consciousness; they perspire freely; they have trembling of the fingers and hands and are restless during sleep.

Now the adrenals, which are two small glands situated one on each side of the body just above the kidneys. Like the pituitary, they are divided into two lobes: the adrenal medulla and the adrenal cortex. The adrenal medulla has its origin in the mesoderm in the same blast of cells as the sympathetic nervous system. These glands produce a secretion called adrenalin, that regulates blood pressure and acts as a tonic to the sympathetic nervous system. When the amount of adrenalin secreted is below normal it permits a low blood pressure and is known as hypo-adrenia. The characteristics we find in this condition are very noticeable; although these children are fairly well balanced in disposition, they have no tendency to fight; they have respect for law and order and they may go to submission if the deficiency is high grade; they tire easily and are sleepy; they seek vocations but lack initiative; they are moody, backward in school and, later in life, are lazy in business; weak among friends; they have a desire for education and desire to know big words without knowing the simpler ones; they become atheists, but pray in secret; they are radical among radicals, conservative among conservatives, easily led, and the personification of indecision.

While, on the other hand, a characteristic of the normal secretion of adrenalin is activity and alertness; they are the aggressors in all undertakings; they are often of the pronounced brunette type, often freckled and a bountiful growth of hair in the hair areas. A characteristic that is easily recognized is often the color of the hair; it is red or auburn.

The adrenal cortex has its origin in the epithelial cells of the mesoderm. It arises from the anterior part of the Wolffian Body and is therefore derived from the same blast in the embryonic layer as the sex cells. The adrenal cortex is the fighting gland and will give support to any undertaking which the conscience tells us is right. It is the gland that sent the boys "over the top" in the late war, for they knew their cause was just and right.

Last, but by no means least, is the thymus. Some authorities refer to the thymus as the most important gland of the developmental stage of the child, both in embryo and in preadolescence. The thymus makes its appearance in the embryo as an involution of the entodermal layer on either side of the pharynx. It is remarkable, also, for the fact that it is constant in the vertebrate series, being found in fishes, reptiles, birds and mammals, and the very fact that the thymus arises from the entoderm is of great significance and has an important bearing upon the influence it has upon the whole human system at large.

The function of the thymus is to supply phosphorus in organic combination during the growth of the body, particularly while the development of the osseous and nervous system demands such a reserve. In other words, it supplies phosphorus to the growing bones and, it may be mentioned in this connection, the calcium furnished for this same purpose also is supplied by the parathyroids. With this idea definitely fixed in your mind you can very readily understand why so many diseases of children are traceable to the lack of these mineral substances to the bony and nervous structures, for a hypo-condition of the thymus produces these conditions, such as rickets, etc. The work of the thymus is definitely traced in embryo where it separates as an independent structure and is divided into two distinct parts. The first part consists of a series of cells of epithelial origin which is a fixed structure. The

second part consists of small movable lymph cells of mesodermal origin, and these, as we said before, are merely accessories to the thymus. The thymus should recede and its work be thereby diminished at puberty, but if it does not it causes a lymphatic hyperplasia. Now, just what do we mean by hyperplasia? We mean the abnormal multiplication or increase in number of the tissue elements of the thymus; that is to say, if this abnormal tissue is present in the thymus at puberty it has not receded as it should. This is particularly noticeable in girls coming into womanhood. The thymus antagonizes the ovaries and when it does not recede at puberty the ovaries are retarded in their development and the girl does not come into womanhood properly, which is known as hypo-ovarianism due to an over-active thymus.

Now, what are some of the signs of hypo- and hyper-secretion of the thymus? In the hypothymic type we note a feebleness of resistance to infections of all kinds, especially in children, though this is also noted in adults; comparatively simple and mild disturbances may be followed by grave exhaustion or even death; operations are badly borne; in adults, feeble resistance to fatigue is common, also nervous exhaustion; nervous instability; lack of power of concentration; lack of mental energy and slowness of thought; lack of initiative and the absence of any definite purpose; they have a child-like character of thought, mental under-development, mental infantilism, and even more grave forms of mental disease may be present; frequent occurrences in children of severe asthmatic attacks with difficulty of breathing followed by sudden death. This has been known to physicians for a long time.

The hyper-thymus is a slender type; fair of face, or angel face; the skin is delicately tinted, the "peaches and cream" variety; they have a narrow waist line, rounded limbs, long chest, white, soft, silky hair; small pearl-like teeth; usually knock-kneed or flat-footed. They tire easily, the same as in hypo-adrenia, and are easily led; they are passive, submissive, weak, irresponsible, peevish and often dishonest; they produce drug addicts, prostitutes and criminals. (The thymus antagonizing the interstitial cells in the male produces the sexual pervert.) They are selfish, nervous, fanatic, feminine, childish, and what we call pathological liars.

Now, these things that I have been telling you about are not the outgrowth of the imagination. They are facts arrived at by clinical study and backed up by laboratory findings. All of these conditions, and many more, have been verified time and time again by some of the biggest men and leaders in medical discoveries both in this country and in Europe. It is only within the last few years that this branch of study has been added to the course of study of the best medical colleges in our country, and the younger men who will soon graduate will have a working knowledge of all this that I have been telling you about.

In conclusion I want to give you a thought from the psychological side of this question that may help you fix some of it in your minds. Of course, I do not expect you to look at a child and be able to tell at once what is wrong with it. It takes long, hard study to do that, but this outline may help you to come to some conclusion. Please bear in mind that there is no such thing as a single gland evolvement; if one gland is wrong, most all of the rest of them are wrong in some way or other. Their action is so closely correlated that it is often a difficult matter to tell which one is primarily wrong and which ones are secondarily wrong.

In the first place, we will take the thyroid. When the child is born, the first thing that we expect in the development of that child is perception, which is governed by the thyroid. The next thing we expect is action, which is governed by the adrenals. And the next thing we expect is reason, which is governed by the pituitary. Therefore, we have the thyroid which equals perception, the adrenals which equal action, and the pituitary which equals reason or the association of ideas. Now, we correlate these three and we have perception, permanent according to whether the thyroid is hypo- or hyper-. An adequate thyroid gives a quick memory, but soon forgets. If the adrenals are normal, we get normal action, which accentuates perception plus or minus, according to whether the thyroid is hypo- or hyper-. The pituitary equals reason, which includes perception, and if the pituitary is normal, equals retentative memory and also an association of ideas. In other words, with a normal thyroid you have normal perception, with normal adrenals you have accentuation of perception, and with a normal pituitary you have a

retentive memory and a normal association of ideas.

As an afterthought, a hypo-pituitary individual, when the deficiency begins in infancy, never seems to emerge from that period of their life.

The genius must have hyper-pituitary to have brains, hyper-thyroid to have emotion, and hyper-adrenal in order to have power.

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THE DIAGNOSIS OF EXOPHTHALMIC GOITER AND SO-CALLED TOXIC GOITER*

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The pathology and physiology of the thyroid gland is of necessity closely related to the symptomatology of exophthalmic goiter and so-called toxic adenoma. Before considering diagnostic problems, it is of interest to note the various theories and hypotheses regarding goiter conditions.

ETIOLOGY

Numerous theories and hypotheses have been advanced as to the cause of goiter, the principal ones being 1. *shock or nervous strain,* each of which is emphasized by Crile. This susceptible constitution with a defective nervous system associated with an endocrine unbalance breaks down, and following this there is primary asthenia and a secondary effect on the thyroid gland, at first compensatory in character but, due to the unbalance of the glands of internal secretion, results in exophthalmic goiter; and 2. *iodine deficiency.* Prevost in 1849, Chatham in 1851, and later Plummer laid stress on iodine deficiency as a causative factor in both exophthalmic and adenomatous goiter. The endemic goiter of inland and mountainous regions is well known. It is generally conceded that the development of adenomatous goiter bears some relation to a lack of sufficient available iodine. Why hyperthyroidism is stimulated in adenomatous goiters by the administration of iodine is uncertain, but clinically it seems to be true. Unquestionably there must be some mechanism that normally regulates the thyroxin concentration of the tissue, and it is highly probable *that the deficiency of iodine initiates the primary condition which results in* what might be termed a pathologic compensation.

Sex. Exophthalmic goiter is seen more frequently in females. The condition when present in males is usually acute and more fulminating. We are familiar with the colloid goiter of puberty, the questionable normal enlargement of the thyroid gland during menstruation, and the history of adenomata frequently dating from a previous pregnancy. Wilson lays stress on sympathetic stimulation, especially of the superior cervical ganglion, producing the syndrome of exophthalmic goiter.

Infections. Gaylord, McCarrison, Plummer and Pemberton emphasize infection as a causative agent. Many patients with exophthalmic goiters date their symptoms from some acute infection, and usually the removal of infected tonsils or other foci brings improvement.

Closely allied is the auto-intoxication theory which assumes the existence of a specific infectious agent or at any rate of specific intestinal flora, the toxic products of which exert their mischief in the thyroid gland. The experiment of Marine and Lembart on fish would tend to advance at least the partial truth of this hypothesis. F. de Guervain emphasizes all intestinal infections as etiologic factors. The old "earth and water" theory, supported by Kocher, is really a combination of the iodine deficiency and infectious hypotheses.

A chemical basis of the condition was stressed in early discussions, the laity pointing out the close association of limestone districts with endemic goiter.

Heredity seems to be a factor. Numerous observers have reported the presence of goiter, adenomatous and exophthalmic, among the members of one family for several succeeding generations. I have seen it present in three generations. Tumors designated by some as

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fetal adenomata may be present at birth, thus supporting the theory of an embryologic rest; adenomata may also develop in a colloid goiter. This type of goiter rarely gives any hyperthyroid syndrome until the patient is past thirty years of age.

Age. Exophthalmic goiter and hyperfunctioning adenomata are conditions of adult life, the former appearing within earlier age limits. Patients with hyperfunctioning adenomata are seldom under thirty years of age; usually they are over forty years of age.

In resume it is sufficient to say that we can not prove any one hypothesis. No one theory will fully explain every case. We cannot say that any one etiologic factor is responsible for all goiters; nor even for all those of one type. From our present knowledge it would seem that colloid and adenomatous goiters are largely the result of what might be termed the neurogenic basis associated with iodine deficiency. Exophthalmic goiter, on the other hand, is more likely to have its etiology in the deficiency of iodine associated with infection.

Distribution. In the United States it has long been recognized that endemic goiter occurs in the Northwest, the region of the Great Lakes, and in the upper Mississippi Valley. Osler stated that goiter is common in the Thames Valley, the Dales, Derbyshire, Sussex, and Hampshire. In Europe there is a high incidence of goiter in the mountains of Switzerland and the adjoining regions of France, Germany, and Austria. McCarrison mentioned its great prevalence in the Himalayas. In general, it might be said that goiters are more common in the mountainous and inland regions than near the coast.

PATHOLOGY AND PHYSIOLOGY

In true uncomplicated exophthalmic goiter marked primary hypertrophy and hyperplasia of the parenchyma are present throughout the thyroid gland. The degree of severity of the clinical condition is paralleled by the pathologic condition of the gland, with perhaps the one exception which may be referred to as the organized exophthalmic goiter. According to Wilson, the relationship between hypertrophy and hyperplasia of the thyroid gland and the clinical symptoms of true exophthalmic goiter is remarkably constant.

This differs markedly from both the gross and microscopic picture of adenomatous goiter. In an adenomatous thyroid there is an irregular, asymmetrical nodular enlargement of the gland. Microscopically there is seen adenomatous tissue surrounded by atrophic and hypertrophic areas of parenchyma containing colloid.

The normal functions ascribed to the thyroid gland are 1. the control and stimulation of tissue in general, 2. the control and stimulation of functional processes of tissue, 3. neutralization of toxic substances produced in the normal metabolism of the tissue, and 4. assistance in the defensive action of the organism against bacterial poisons. I mention these separately and distinctly though I shall only refer to thyroid secretions as one consistent entity which, though better for discussion, is not scientifically correct.

DIFFERENTIAL DIAGNOSIS

Exophthalmic Goiter: Chief Complaint: Patients suffering from exophthalmic goiter often present themselves for examination not knowing that they have a goiter. They complain of "being a little nervous, headaches, weakness, especially in the knees, diarrhea, and other symptomatic troubles. When asked directly how they feel, they will usually answer "Fine."

The onset of symptoms often dates from some previous illness or psychic shock. There may be a history of accumulative infection such as chronic tonsillitis or chronic constipation. On questioning, a definite syndrome derived from the catabolic nature of the disease may be revealed. Enlargement of the thyroid gland may or may not have been noticed. Appetite is always increased in true uncomplicated exophthalmic goiter, except in marked crisis. There is a definite progressive loss of weight in spite of the increase of appetite. There may be certain gastric symptoms of vomiting and diarrhea, depending on the stage of the disease or the proximity to crisis.

Central Nervous System: Both the central and sympathetic nervous systems are directly affected. A tremor, usually characterized as fine, develops. Patients with exophthalmic goiter are hyperstimulated, nervous, excitable, emotional, unstable, irritable, restless, imaginative, cannot sleep, and have bad dreams. Because of the emotional instability it is comparatively easy to make such patients laugh or cry, and it is

difficult to appeal to their reason. In crisis there is a typical delirium and psychopathic state.

The mental and nervous picture is twofold, as are the manifestations in the other systems. It is not that of a true hyperthyroidism, as often stated, but rather hyperthyroidism plus a superimposed toxemia. Whether this is due to the poisonous products of excessive catabolism improperly eliminated or to a toxin produced by the thyroid in addition to its pure thyroxin is uncertain. At any rate experience has shown that it is the poisonous extract or toxin, whatever its source, that produces the crisis and makes patients with exophthalmic goiter such poor surgical risks. Clinically this toxic picture may be eliminated, though not permanently, by the administration of iodine. Almost pathognomonic of the condition is the manner in which the patient assumes numerous and varied positions, giving the impression of posing. A marked change may be produced in the clinical picture of these patients in a few days by the administration of iodine, used, however, only as a palliative measure.

Gastrointestinal System: The specific picture of exophthalmic goiter may also be overshadowed by the gastro-intestinal complaint. Diarrhea and vomiting are really a part of the syndrome of crisis or impending crisis, but these are sometimes so pronounced that they obscure the rest of the picture of exophthalmic goiter. I know of several instances where exophthalmic goiter patients have had complete investigations of the gastrointestinal tract by excellent internists before exophthalmic goiter has been recognized as the causative factor.

Cardiovascular System: The heart is rapid and the force of the beat is increased. Palpitation, dyspnea, swelling of the ankles, perhaps irregularity of the heart, fibrillation and marked pulsation of the thyroid vessels are present. There may be definite thrills and bruits at the superior and inferior poles of the thyroid gland. The syndrome becomes more marked as this condition progresses. The picture is that of hyperstimulation plus toxemia. The blood pressure, both systolic and diastolic, is high, but more diagnostic than this is the high pulse pressure. Headache, the reult of increased pulsation and toxemia is often present. Marked arrhythmia, commonly in the form of auricular fibrillation, is usually found in crisis.

Genito-urinary System: Mild glycosuria is often present, and there may be frequency, nocturia and burning associated with a mild nephritis. The picture is due partly to the irritability of the central nervous system and partly to the toxic effect on the kidney.

Respiratory System: The dyspnea is not obstructive in pure exophthalmic goiter, but is due to the effect of the toxemia on the sympathetic and central nervous system, as well as on the cardiovascular system. In crisis there is sometimes a hypostatic pneumonia or hydrothorax which may simulate, either partially or completely, primary chest disease. Here we have to rely chiefly on the history. The respiratory symptoms also improve on iodine.

Skin and Other Conditions: The exposed surface of the skin may be bronzed or resemble that of Addison's disease. It is moist and warm. The patients complain especially of excessive perspiration and of a definite heat intolerance; they are usually rather plethoric.

The eyes may or may not show exophthalmos. There is usually what might be termed a fairly frank stare preceding the development of exophthalmos, which may appear early or late and is not always an index of the toxicity of the patient. Patients often complain that their eyes hurt and feel constantly strained. The finger nails are often suggestive in both exophthalmic and adenomatous goiter, though perhaps more marked in exophthalmic goiter. The cuticle is separated back farther than usual and extends out at an angle from the matrix of the nail. The degree of muscular weakness may be best measured in the quadriceps and is elicited by having the patient step up on a chair.

The basal metabolic rate is very high when the patient is in crisis, often going above one hundred. The basal metabolic rate is not always a criterion as to the degree of toxicity, but by clinical observation this can usually be estimated rather closely.

At the outset the gland may be hardly palpable or may be enlarged slightly but with the progress of the disease it becomes enlarged and hardened and may resemble one with adenomata. It should be remembered that exophthalmic goi-

ter may be substernal, although this occurs much less frequently than in adenomatous goiter.

Course: The uncomplicated case of exophthalmic goiter runs a rather typical course, wave-like in character with exacerbations and remissions. The condition is usually progressive for about eight to nine months ending in a crisis, and then, if the patient does not die, there is a remission of a few months followed by another exacerbation. The condition may become worse with each successive crisis, or, as is most frequent, each succeeding exacerbation may be milder. Thus, the thyroid may seemingly wear itself out and the patient recover from the exophthalmic syndrome, but usually by this time we have nothing but a human wreck.

Toxic Adenomatous Goiter: Chief Complaint: Patients with adenomatous goiter often present themselves knowing that they have a goiter, but not connecting the hyperthyroid syndrome with their complaint. Once having become hyperthyroid, the patient grows slowly but steadily worse until usually the tumor is removed or death ensues.

There may be multiple adenomata or a single adenoma, which may or may not be encapsulated. Either multiple or single tumors may produce a hyperthyroid condition; according to my observation, an isolated tumor is more apt to be virulent. Hyperthyroidism in a patient with an adenomatous goiter may develop early, late, or not at all.

The majority of adenomata originate in colloid goiter; some develop from embryologic rests. There are two theories as to the action of adenomatous goiters which have become hyperfunctioning: 1. that the adenomatous tissue elaborates and delivers thyroxin; or 2. that it in some way, perhaps as a foreign body, stimulates the surrounding thyroid tissue to hyperfunction. The correct theory seems as yet to be an open question. At any rate we know in the adenomatous hyperfunctioning thyroid that the adenoma is the offender, because by simple enucleation, where the adenoma is encapsulated, the condition may be relieved. The hyperthyroid state often has its origin in the administration of iodine. Adenomata, though quite frequently present, rarely become hyperfunctioning until a patient is past the age of thirty, unless iodine is administered.

The onset is slow though progressive. The symptom complex is similar to a pure hyperthyroid state. The appetite may or may not be increased, perhaps more frequently the latter. The pulse becomes rapid. There is dyspnea, often obstructive. There may or may not be cord paralysis, depending on the position of the growth. The blood pressure is markedly increased, the pulse pressure is also high, though not so high as in exophthalmic goiter, and does not return to normal after operation. There is no crisis with vomiting and diarrhea, such as is characteristic of exophthalmic goiter. At times there may be an exhaustion type of delirium; there may also be vomiting which is a reflex manifestation of obstructive dyspnea. In the late stages marked secondary degeneration is found throughout the system, especially in the cardiovascular system. The basal metabolic rate never goes so high as in exophthalmic goiter.

The patients are nervous, lose weight steadily, develop a tremor, and perspire freely. The toxic picture with insomnia, posing, emotional instability, and so forth is not present, although the patient may be very weak and depressed. Clinically, the hyperfunctioning adenomatous goiter in its last stages with its marked generalized effect may closely resemble exophthalmic goiter, although by careful clinical observation they can usually be differentiated, especially where there are degenerative processes such as a cyst, or calcareous deposits.

Exophthalmic goiter and toxic adenomatous goiter are two closely related diseases of the thyroid gland, which through their pathologic effects produce systemic reactions and become systemic in nature. These two conditions differ in their pathologic pictures and physiologic results. The syndrome of hyperfunctioning adenomatous goiter has been produced in a case of myxedema by massive doses of dessicated thyroid and thyroxin. There may be a combination of the two conditions in the same gland, just as either condition may be superimposed on the colloid goiter.

In exophthalmic goiter there is a diffuse primary hypertrophy and hyperplasia of the parenchyma of the gland as differentiated from the adenomatous goiter with one or more nodules surrounded by atrophic and hypertrophic areas of parenchyma containing colloid. Often the

colloid character of the goiter may overshadow the adenomata, leading to an erroneous diagnosis, if based on observation alone. Proper palpation of the gland will usually eliminate this error. Inspection and palpation of an adenomatous goiter reveal an unsymmetrical enlargement of the thyroid gland consisting of either a single, small definite adenoma or a large, nodular tumor composed of several adenomata. This differs materially from the diffuse, even enlargement of the gland in exophthalmic goiter.

According to statistics from the Mayo Clinic 78 per cent. of the patients with adenomatous goiter are over forty years of age at the time of examination while 50 per cent. are over fifty years. The reverse is true in exophthalmic goiter, the average age being thirty-seven, with 85 per cent. of the patients under fifty and 61 per cent. under forty years.

The average duration of adenomatous goiter is sixteen years before the onset of symptoms while in exophthalmic goiter it is only four years. Exophthalmic goiter runs a course, wave-like in character with cycles of exacerbations and remissions, while in adenomatous goiter the course is progressively downward, once the gland begins to hyperfunction.

The metabolic rate in patients with adenomatous goiter is consistently lower than in those with exophthalmic goiter. The blood pressure, both systolic and diastolic, is high but the pulse pressure is consistently lower in adenomatous goiter. After operation the systolic pressure remains consistently high, while in exophthalmic goiter after two to six months it usually returns to normal or lower, even in a case with marked systemic effect. Systemic fatigue, especially cardiac, is more pronounced in adenomatous goiter, perhaps due to the associated hypertension and consequent peripheral resistance which gives an added strain to the heart action. In auricular fibrillation the pulse rate at the wrist may not be a true index of the heart rate.

Recently, Plummer has advised against the use of a cardiac stimulant such as digitalis. In both types of goiter there is a tendency for enlargement of the heart, at first perhaps compensatory. The degree of enlargement is more marked in adenomatous than in exophthalmic goiter. There is a marked absence of the bruit and thrill, especially of the superior vessels, of exophthalmic goiter in cases of adenomata. The carotid bruits, pronounced in the region of the inferior vessels, may lead to confusion, especially in the case of adenomata with marked myocardial degeneration. According to some observers there may be a bruit in colloid goiter. I have never been able to elicit a true bruit of the superior vessels in colloid goiter. There may be pulsation of the gland in adenomata but not the diffuse thrill of exophthalmic goiter. The pulse is rapid in both conditions, perhaps more rapid in the earlier stage of exophthalmic goiter.

The picture of the nervous condition is quite different in the two syndromes. As previously mentioned, there is marked absence of the psychopathic, emotional, restless state in adenomatous goiter. Though the adenomatous patient may be markedly stimulated, there is not the crisis in adenomatous goiter that there is in exophthalmic goiter with the psychic picture previously described or the gastro-intestinal complex of vomiting and diarrhea. Occasionally there may be a reflex vomiting with obstructive dyspnea in adenomatous goiters. Pneumonia and hydrothorax, found in exophthalmic goiter, are absent in adenomatous goiter. There may be marked obstructive dyspnea in adenomatous conditions with the trachea pushed considerably out of alignment, vocal cord paralysis, and chronic passive congestion of the face, all of which are consistently absent in exophthalmic goiter, with perhaps the one exception of the rare substernal exophthalmic goiter. The stare and exophthalmos, at one time or another usually present in exophthalmic goiter, are absent in pure adenomata with hyperthyroidism. There is a constant, progressive, but very slow, loss in weight in adenomatous goiter, as compared to the rapid loss in exophthalmic goiter. The muscular weakness as measured by the strength of the quadriceps is more marked in exophthalmic goiter, though present in both types.

The picture of exophthalmic goiter may be greatly changed so as to resemble that of a hyperfunctioning adenoma by the use of iodine. This has been done at times by the medical profession and by numerous "goiter cures;" which are on the market.

The postoperative myxedema, formerly spoken of so frequently, was probably, in some instances at least, due to operations having been performed in cases of thyroiditis rather than in true exophthalmic goiter. Pemberton, Sistrunk and like-

wise Crile, resect two-thirds of the gland with few post-myxedematous pictures. Where a thyroiditis 3 (on a scale of 4) is reported by the pathologist, myxedema will undoubtedly follow operation. The condition would also have occurred if operation had not been performed.

In exophthalmic goiter of several years' duration, what may be called an organized gland, closely resembling an adenomatous gland or containing adenomata, often results. Patients presenting this condition may gain in weight. Their basal metabolic rate remains around thirty or forty on the administration of iodine. The product here seems purer and the syndrome more that of a true hyperthyroid state. At any rate, the patients seem to have adjusted themselves to the additional toxin. The clinical picture still remains that of an exophthalmic goiter though not so pronounced as in the earlier stages. The complicated condition of a mixed gland is to be considered in preoperative treatment.

In conclusion, the manifestations of exophthalmic goiter are those of a pure hyperthyroid syndrome plus a superimposed toxemia, while those of so-called toxic, or, as it is preferably designated, hyperfunctioning adenomatous goiter are those of a pure hyperthyroid state.

DISCUSSION

Dr. Joseph K. P. Hawks, Bloomington: It is a very admirable thing that the Medical Section of the State Society is favored by a paper on goiter. This is particularly true because you men see goiters before the surgeons do. There are a good many things about goiter that the internist should recognize. In the first place, we don't always recognize goiter when we see it. And in the next place, we sometimes see goiters that are not present. I think the doctor has given us a very carefully worked out differentiation between the two toxic types of goiter—the toxic adenomata and the true exophthalmic type.

We are apt to become rather verbose and spread ourselves out considerably when we classify goiters. The more simple classification we can arrive at the better for us and the better for our patients. I think the doctor has a simple classification of toxic adenoma and the exophthalmic goiters.

One thing about the exophthalmic goiter that the doctor spoke of is the fact that the exophthalmic goiters occur in cycles. He spoke of the cycle of nine months. Dr. Charles Mayo said it is a good deal like a chronic appendix. It has its remissions and exacerbations. The time to treat those cases surgically is not during the exacerbation but in the remission. The same as with an appendix case.

Another thing about exophthalmic goiter that is particularly dangerous, particularly in treating it from a surgical standpoint, is the condition when we have the pronounced mental changes verging on hallucinations and the cases in which we have nausea and vomiting.

Last Fall it was my privilege to drop into Dr. Andre Crotti's clinic at Columbus. He had a case he was going to operate on. The interne told him: "The patient started to vomit this morning." He said, "I won't touch it at all." Those are the two dangerous things in the exophthalmic type.

Another thing is the time of life in which these two conditions develop. The exophthalmic goiter is typically the type of younger life.

The adenomatous goiter comes to hyperfunction later in life. We frequently have patients come to us with a story like this: "I am getting short of breath and I am awfully nervous." Ask them about the goiter. "I have had that for twenty years. It never bothered me any. That cannot be the cause." But it is.

Another thing the doctor brought out is the difference in some of the treatments that are given these two different types. The exophthalmic improves under iodine. The adenomatous type becomes worse under iodine. That is a danger we have to deal with, especially with quack medicine people who are furnishing people everywhere with goiter cures which contain iodine. It may help one type and makes another type worse.

Another thing, the use of iodine is a little dangerous, when you consider the work which has been done in Ohio on children by Marine and others—feeding the children in the schools iodine.

When adults get enthusiastic over the use of iodine they may harm themselves by taking it, especially if they have the type that in later adult life is beginning to hyperfunction.

Basal metabolism is something that is of great value in the study of goiter, and yet it has its limitations. I don't think we can be guided entirely by our metabolic rate in our summing up or estimation of a case of hyperthyroidism. We have to study our cases individually. Some cases may have a high metabolic rate and not be as toxic as the cases that have a lower metabolic rate.

He spoke about digitalis. I have always found that digitalis is a pretty good thing in these cases. Of course, with a heart that is badly crippled, digitalis sometimes does more harm than good. You all know that better than the surgeons do.

Another thing is the use of morphin. It is the one thing we can depend upon to hold our goiter cases down just as much as digitalis.

Dr. Maximilan Kern, Chicago: Dr. Hawks very correctly remarked that we have to be somewhat verbose in our classifications of goiter. In private practice I believe you will agree with me that it is quite an impossibility to draw sharp lines of demar-

cation between the conditions arising from a hyperfunctioning thyroid. When we get an adenomatous condition of a thyroid that is hyperfunctioning according to all tests and there is evidence of toxicity, that is tantamount to an indication for treatment for exophthalmic goiter.

I disagree with Dr. Hawks as regards basal metabolism. I think basal metabolism determination is an important and safe guide provided that it is accurate. There is no likelihood of making a mistake. In institutions, where the patient is prepared for twelve hours at least under proper conditions and at least three determinations made, I think that the determined basal metabolism is an absolute indication of the condition of the thyroid. If this is accepted as true, and it is by many, then it immediately raises the question whether iodine medication is indicated or not by the particular conditions.

During the meeting of the Association for the Study of Goiter, in Bloomington, there was a strong spirit of accord between surgeons and internists as to which types of goiter cases were surgical and which medical. But there is no general consensus of medical opinions as to when iodine should be used in goiter cases and when not. Only a few have dared venture their opinions against the indiscriminate use of iodine for every kind of goiter and thyroid condition.

Dr. Israel Bram, of Philadelphia, who has written as much as anybody on the medical treatment of goiter, is absolutely opposed to iodine medication as a routine. Bram's opinion on non-surgical treatment of thyroid conditions should, I believe, be accepted as the sum total of experience of one of the leading authorities in this field of clinical research.

As Sajous remarks, even patients with chronic goiter of the endemic type often do not bear iodin preparations well and it acts as a general toxic. I myself have found in a series of over two hundred unselected cases that whenever iodine had been administered for any length of time, there was invariably more or less exaggeration of the heart rate.

W. A. Plummer has shown that if a goiter contains adenomatous tissue the administration of iodine is not a safe procedure and may irritate a hyperthyroidism after some months' use or after a longer period with small doses. This fact should impress us greatly with the necessary care in iodine therapeutics.

There are many reports in the literature where thyrotoxicosis was produced by the use of iodine preparations in the form of iodized salts obtained in groceries, department stores, and drug stores. This is particularly true in cases of so-called border line cases of exophthalmic goiter and it is even not excluded in cases where iodine seems indicated, especially when the patient is not carefully watched while being fed iodine preparations.

With endemic goiter so universally prevalent, and in view of the lack of agreement in the medical ranks generally as to when iodine is indicated, I think that the Section of Internal Medicine of this State Medical Society should appoint a committee to recommend some means by which this Society could educate, or perhaps better still uneducate the profession and the public in regard to the promiscuous use of iodine. I am aware of the fact that it would require a great deal of courage to go on record with such a radical idea, but I am convinced that this would be a necessary step in order to benefit the sufferers from various thyroid and "quasi-thyroid" diseases. I have only recently come across a case of a young woman who was the mother of a child less than one year old. She complained of dyspnea, rapid heart action, constant fatigue, loss of weight and extreme nervousness. All those symptoms dated back to her third month of pregnancy and the condition was getting constantly worse. There was a marked loss of weight and a B.M.R. of plus 45. Upon investigation it was found that she had read in the newspapers about some recommendation of iodine medication for expectant mothers, and had started to take iodine salts as soon as she became pregnant, without consulting her physician about it. The interruption of iodine medication promptly relieved all symptoms including the high basal metabolism.

I have had several similar cases of more or less toxicosis and tachycardia from the continued use of iodine in small doses, and I am convinced beyond a doubt that iodine acts as a general toxin and that it is not always taken up by the thyroid gland.

Until such a time when it will be possible to come to an agreement as to the exact and easy differential diagnosis between the various types of goiter, I think iodine should be handled cautiously and should be left to the physician who knows when and to what extent it is indicated, and who has the opportunity to detect and guard against its deleterious effects.

In closing I want to congratulate Dr. Bowen for his very painstaking and conservative presentation of this very complex and interesting subject.

Dr. L. C. Gatewood, Chicago: I wish to second what Dr. Hawks has said concerning the need of the medical man for a clear understanding of this phase of the goiter question. He usually sees the case first. During the last few years it has been the custom at the Cook County Hospital to admit the goiter cases to the medical wards for observation. When admitted directly to the surgical service they have very commonly been transferred to the medical ward and the internist has collaborated with the surgeon in their management.

Our experience with iodine there has, I think, tallied with that elsewhere. In the first place iodine, while it does give a very striking improvement in true exophthalmic goiter is usually of only temporary value. One of the greatest dangers that has come in general from the use of iodine in exophthalmic goiter has come from the marked

improvement which has persuaded the patient to refuse operation. We feel when we put an exophthalmic goiter patient on iodine, that the patient should be informed that the results are temporary and that we are not proposing it as a medical treatment to take the place of operation.

Otherwise, if we get a striking improvement and then advise that patient to be operated on after a short time, the patient will say, "No, I am so much better I will go on this way."

In cases where iodine has been used over considerable periods of time it has been found that there is a sudden decrease both in symptoms and metabolic rate followed by a period of fairly uniform lowered level and then a gradual rise. If those patients refuse operation on the basis of iodine therapy they are likely to come back to where they were and very likely to be eventually worse, and you are fortunate then to get even a temporary benefit from resuming the iodine.

In the adenomatous type of goiter iodine is of little or no value and is likely to do harm. We feel therefore that the iodine is of value only where we expect to have the patient operated upon within a comparatively short time, when the harm that might come to an adenomatous goiter will be negligible because it is a slow change, and where the improvement that comes with an exophthalmic goiter can usually be gotten within a week or ten days. We regard this not as a medical substitution for surgical treatment, but as a preparation for operation.

As to the heart conditions, it is very comforting to know that some of the fibrillations which occur in adenomata will disappear after operation and that some of those patients who seem to have a well marked heart muscle damage and who are apparently rather bad surgical risks, show a very considerable cardiac improvement after operation and are not in such bad shape for operation as might otherwise be thought.

Dr. Dean F. Stanley, Decatur: Quinidine has been effectual in auricular fibrillation of goiterous hearts if given in increasing doses from the initial dose of three grains, the dosage varying from 25 to 35 grains, or even greater in a day. It has proved very efficient in controlling and stopping auricular fibrillation of goiterous hearts, especially after digitalization.

It has been found usually that after the heart rhythm becomes normal the dose can be markedly decreased. It is usually necessary to keep on with a small daily dose, usually not greater than 3-8 grains.

Dr. James H. Hutton, Chicago: This is an interesting and important subject. I am sorry it has not provoked more discussion. When a goiter patient comes under observation one of the first things we should do is to decide whether an adenoma is present. If we can decide certainly that one is present we should not use iodine at all. If we are uncertain on that point iodine if given at all should have the very closest supervision.

Dr. Wilbur L. Bowen, Peoria (closing): As I mentioned in my paper it is often difficult to differentiate adenomatous goiter with hyperthyroidism from exophthalmic goiter; especially where the clinical findings are those of adenomatous goiter plus hyperthyroidism, and yet we have a clinical picture presenting many or most of the features of exophthalmic goiter. I believe that we are here dealing with what might be termed a mixed goiter.

In my own experience I have been able to prove this partially. As has been suggested in the discussion these patients often develop a typical exophthalmic goiter crisis following operation. We have been able usually to eliminate this by giving iodine in progressive doses over a short interval before operation; with the idea in mind that the adenomata present would not be markedly affected before operation and the exophthalmic goiter crisis would be prevented. This to date has seemingly eliminated this type of crisis. It should be borne in mind that I am not here advising the use of iodine promiscuously in all types of goiter preoperatively, but that I am speaking of the complex picture I call mixed goiter.

I am in favor of the use of iodine merely as palliative treatment and believe that its use is mostly limited to preoperative treatment in exophthalmic goiter according to our present knowledge. I did not, in my paper, mean to convey the idea that iodine is specific in the treatment of exophthalmic goiter. If I conveyed that impression I wish to correct it. I do know that iodine is palliative and has reduced the incidence of crisis which makes exophthalmic goiter such poor surgical risk; and it does seem specific (for the time at least) in the treatment of the various systemic reactions, such as vomiting, pneumonia, etc., which are really a part of the syndrome known as crisis. I may illustrate this by a case in question which I saw in consultation.

A girl twenty-one years old, single, had been nervous, fidgety, had heat intolerance, palpitation, swelling of neck, loss of weight, etc., for one year, giving the typical syndrome of exophthalmic goiter.

At the time I saw her she was near a crisis, pulse 120, very nervous, irrational, perspired easily, had diarrhea for two or three days and vomiting. She was put on Lugol's solution. On the third day she felt much better, diarrhea and vomiting had ceased, and on the eighth day pulse began to drop, assuming the level of 100, and she began to gain weight. She was not put to bed. She was operated on at the end of the second week from time treatment was started, doing a bilateral partial resection of both lobes of thyroid. Her recovery was uneventful, and she was discharged from hospital on the twelfth post-operative day.

However, a word of warning is necessary here. It should be remembered that iodine seems to lose its effect when continued over a long period of

time, and the pulse may again rise; though we usually never have a return relative to original severity (as long as iodine is given in sufficient quantities). However, the picture assumes more that of adenomata with hyperthroidism giving what is usually referred to as an organized gland. Something of the same picture we have following litigation.

I do not advise long continuous use of iodine.

At the Mayo Clinic the surgical mortality in exophthalmic goiter took a marked drop with the use of iodine, and when digitalis was no longer used in the treatment of adenomatous goiters with myocardial changes. This may be a coincidence but does not seem to be.

Again I want to say we do not yet know all about the physiology of exophthalmic goiter or the pathology. Until we do know that, it will be impossible to say whether exophthalmic goiter is a medical or surgical case. So far as we know now, it is surgical, although the results are not always what we want them to be.

I have not had any experience with the use of quinidine at all.

Dr. H. S. Plummer advises against the use of digitalis. He believes that the condition of the heart is due to the increased strain which is produced by the catabolic syndrome which is the result of increased hyperthyroidism and that digitalis adds to the poisonous effect on the heart.

I believe that the basal metabolic rate is a very good criterion as to the condition of the patient when taken with the clinical picture but there are many possibilities for error, as the doctor stressed. You can take the average markedly psychoneurotic patient, give her a B. M. R. and obtain a reading of 100. You can take that same patient and get 20. Not one B. M. R. but several consecutive B. M. R.'s are more of a true index.

In regard to the classification, I believe as the doctor suggested that the simpler we can make these things the better.

I want to stress again, in conclusion, the fact that I believe that exophthalmic goiter is a condition of hyperthyroidism plus a toxemia, and that the crisis is due to the toxemia rather than to hyperthyroidism, whereas in adenomata you get more of a pure hyperthyroid syndrome.

I have fed a case of myxedema on increasing doses of dessicated thyroid and have gotten identically the same picture as that of adenomata with hyperthyroidism.

PROPOSAL DECLINED

She—"I would not think of marrying such an intellectual monstrosity and physical misfit as you are, you numbskull? Do you get me?"

He—"Well, from the general trend of your conversation, I should judge not."—American Legion Weekly.

THE EXCHANGE PROBLEM

A friend tells this one on "Sarg." When Sarg was in France he and a companion commandered an ancient automobile, the first that he had ever operated. They got along pretty well for a time but finally had to get a new battery. They located one. "What is the charge for this battery?" inquired Sarg. The automobile man misunderstood. "One and one-half volts," he replied. Then Sarg turned to his companion. "How much is that in U. S. money?" he asked in a whisper.

HOW TRUE!

There was a faith-healer of Deal,
Who said, "Although pain isn't real;
If I sit on a pin
And it punctures my skin,
I dislike what I fancy I feel."—Anon.

Society Proceedings

ADAMS COUNTY

October 12, 1925. The meeting was preceded by a dinner at the Elks' Club in honor of our guest, Dr. Arial W. George, Professor of Roentgenology, Tufts Medical College, Boston, Mass. Thirty-nine physicians and their wives were present.

The regular meeting was held at the Chamber of Commerce and was called to order by the President at 8:30 P. M. Thirty members and ten guests were present.

Dr. Arial W. George of Boston gave an illustrated address on "The Present Status of Gastro-Intestinal Tract Examination by X-Ray." This was, without a doubt, the most interesting address on a purely roentgenlogical subject that has ever been presented before the society. Drs. Swanberg, Jurgens, Aldo Germann and Center discussed the paper. Dr. Albert Garver read an obstetrical case report and Dr. Walter Stevenson showed motion pictures of the medical picnic.

The Secretary read a communication from Dr. W. E. Shastid, Secretary of the Pike County Medical Society, inviting the membership to a meeting of that society at Barry on October 22. Dr. Swanberg made a motion that Dr. Arial W. George of Boston be made an Honorary Member of the Adams County Medical Society. Dr. Nickerson amended the motion to include a rising vote of thanks for Dr. George's splendid address to the society. Seconded and carried.

The meeting adjourned about 11:10 P. M.

HAROLD SWANBERG, M. D.,
Secretary.

COOK COUNTY

CHICAGO MEDICAL SOCIETY

Chicago Medical Society regular meeting, October 21, 1925.

1. Idiopathic Ulcerated Colitis with Special Reference to Its Etiology and Treatment—Arch H.

Logan, Mayo Clinic, Rochester, Minn. Discussion—Ralph C. Brown.

2. Amebic Dysentery—A. A. Goldsmith. Discussion—Chas. A. Elliott.

Regular meeting, October 28, 1925.

1. The Kielland Forceps or Manual Rectification in the Management of Persistent Occipto-Posterior Positions—C. S. Bacon. Discussion—Chas. B. Reed.

2. The Use of Glucose Solutions for the Treatment of Toxemias of Pregnancy in the Cook County Hospital—D. S. Hillis. Discussion—Jos. L. Baer.

Regular Meeting, November 4, 1925.

1. Newer Developments in Laryngology—Mr. Philip Franklin, London, England. Discussion—Norval Pierce, J. Gordon Wilson, Harry Pollock.

2. Present Treatment of Fractures—Sir W. Arbuthnot Lane, London, England. Discussion—Wm. Cubbins, Kellogg Speed, Philip Kreuscher.

McHENRY COUNTY

The second regular meeting of the McHenry County Medical Society was held October 19 at the Court House, Woodstock, Illinois, in conjunction with T. B. Clinic of Illinois. Examinations were made free of charge to all patients brought before the Clinic.

There was no lecture at this meeting and the necessary election of officers was held with the following results: President, C. F. Baccus, Woodstock; vice-president, C. W. Bailey, Hebron; secretary and treasurer, A. V. Lindberg, Crystal Lake; delegate, C. F. Baccus, Woodstock; alternate delegate, G. H. Pfleuger, Crystal Lake; censors, Glenn Wright, Woodstock, H. L. Seelye, Harvard, and R. M. Curtiss, Marengo.

G. F. Baccus, Secretary.

OGLE COUNTY

The Ogle County Medical Society met in regular session under the auspices of the Ogle physicians in the High School Building at Leaf River, on Wednesday, October 28, 1925. President J. C. Akins, of Forreston, called the meeting to order. Roll call found nine members present and four visiting guests. Visitors: Drs. A. W. Christenson, J. E. Tuite and Edw. H. Weld, of Rockford. Minutes of previous meeting were read by the secretary and approved. Although the attendance was samll, owing to the bad weather and roads, a real pleasant meeting was held.

Dr. Herman L. Kretchman, of Chicago, who was to read a paper, missed his train and was not able to be present. Dr. W. J. Rideout, of Freeport, read a most excellent paper on value of "Ophthalmoscopsy as an aid in diagnosis of some general diseases." This paper was discussed by Dr. Edw. H. Weld of Rockford.

The following officers were duly elected for the coming year: President, J. C. Akins, Forreston; vice-president, J. M. Beveridge, Oregon; secretary-treasurer, J. T. Kretsinger, Leaf River; delegate to State Medical Society, W. E. Kittler, Rochelle; alternate, H. E. Bowerman, Leaf River; censor for three years, W. E. Kittler, Rochelle; legislative committee, J. M. Beveridge, Oregon, W. E. Kittler, Rochelle, and C. J. Price, Mt. Morris.

The Secretary read a card received from Mrs. Stevens: "We sincerely appreciate your sympathy and beautiful flowers in memory of Dr. Stevens."

The following letter was received from Dr. Sidney D. Wilgus: "Thanks for the invitation to attend the Ogle County Medical Society meeting at Leaf River tomorrow. Unfortunately, Dr. Fell, who is associated with me, is on his vacation and I can not very well get away. I would like particularly to discuss Dr. W. J. Rideout's paper for the reason that the ophthalmoscope is of great importance in the examination and diagnosis of mental and nervous diseases. In fact, we find it satisfactory to use the ophthalmoscope in every case we see."

Dr. A. E. Bogue, of Rochelle, was elected to membership.

Motion made by Dr. Beveridge—That the Society, by a rising vote, express their appreciation and thanks for Dr. Rideout's paper. Carried unanimously with applause.

Motion made by Dr. Beveridge—That the Society hold a night meeting at Oregon during the month of January, 1926. Carried.

Meeting was adjourned to meet in January, 1926.

J. T. Kretsinger, Secretary-Treasurer.

Marriages

Stuart Broadwell, Jr., to Miss Mary Temple Smith, both of Springfield, Ill., in September.

Waldo B. Ison, East St. Louis, Ill., to Miss Henrietta Weinzel of St. Louis, July 18.

Theodore Ferdinand Ruther, Effingham, Ill., to Miss Alice Faust of New Orleans, August 18.

Richard Martin Rutledge, Peoria, Ill., to Miss Dorothy Phillips of Delavan, September 19.

Clarence Fischer, to Miss Madeline Cashin, both of Peoria, October 6, 1925.

Personals

Dr. Paul R. Cannon has been appointed assistant professor in pathology at the University of Chicago.

Dr. Karl A. Meyer has been appointed to a professorship of clinical surgery at the University of Illinois.

Dr. Charles F. Read, formerly superintendent of the Chicago State Hospital, has been appointed head of the department of nervous and mental diseases, Loyola University Medical

School, and has taken up private practice in nervous and mental diseases in Chicago.

Dr. Elbert L. Damron, Effingham, has been appointed physician for the Pennsylvania Railroad to succeed the late Dr. James H. Walker.

Dr. Malcolm L. Harris, chairman of the Judicial Council of the American Medical Association, was installed as president of the Chicago Medical Society at a banquet in the Hotel La Salle, October 14.

Dr. Frank Billings laid the cornerstone of the Albert Billings Memorial Hospital at the University of Chicago, October 3. Dr. Henry A. Christian, professor of medicine, Harvard University School of Medicine, Boston, delivered an address.

Dr. Arial W. George, Boston, addressed the Central Illinois Radiological Society, Quincy, October 12, on "The Present Status of the Gastro-Intestinal Examination by Roentgen Ray." A dinner and reception will be given preceding the meeting.

Prof. Alfred N. Richards, Ph.D., professor of pharmacology of the University of Pennsylvania School of Medicine, Philadelphia, addressed the Chicago Society of Internal Medicine and the Institute of Medicine of Chicago at a joint meeting at the City Club, October 26, on "Experiments Concerning the Nature of the Function of the Kidney."

Among the speakers at the recent annual meeting of the Medical Society of the Missouri Valley, St. Joseph, Mo., were Drs. Robert H. Babcock, S. R. Slaymaker and Vincent J. O'Conor, who spoke on "Functional Disorders of the Heart," "Electrocardiograph Interpretations" and "Diseases of the Kidney," respectively.

Dr. Arthur J. Cramp, director, Bureau of Investigation, American Medical Association, spoke before the Chicago Laryngological and Otological Society, Hotel Sherman, October 19, on "Fake Aids for Hearing," illustrated by lantern slides, and Harvey Fletcher, head of the research department, Bell Telephone Laboratories, on "Interesting Data on the Improved Audiometer."

Dr. James B. Herrick addressed a meeting of the woman's board of the Chicago Heart Association, October 20, on "What Women Can Do to Help in a Campaign Against Heart Disease"; Dr. Walter W. Hamburger on "Some of the Factors in a Comprehensive Cardiac Program," and Dr. Harrold A. Bachmann on "The Child with Heart Disease." Mrs. Morris Woolf is chairman of the woman's board of governors of the Chicago Heart Association; Dr. Herrick is president of the Chicago Heart Association.

Dr. Isaac D. Rawlings, state health director, called a meeting of all health officers in the state at the National Catholic Community House, East St. Louis, October 20. Dr. W. A. Evans, Chicago, Dr. William H. Parke, New York, Surgeons C. C. Pierce and Thomas Parran, Jr., U. S. Public Health Service, and Dr. Jacob C. Krafft, Chicago, president, Illinois State Medical Society, took part in the program.

Dr. Grace S. Wightman, Chicago, has been appointed chief of the division of child hygiene and public nursing of the Illinois Department of Health, to succeed Dr. Edith B. Lowry, who held the position on a temporary appointment. Dr. Lowry did not compete in the civil service examination for a permanent appointment. Dr. Wightman was formely director of the field department of the Chicago Municipal Tuberculosis Sanitarium.

At the fifth annual meeting of the Tri-County Medical Society, Monmouth, October 1, Dr. David S. Hillis spoke on "The Use of Forceps in Obstetrics"; Dr. John L. Tierney, St. Louis, "Problems in Cardiovascular-Renal Diseases"; Dr. Vernon C. David, Chicago, "Fractures of the Femur in Children," and Dr. J. H. Hutton, Chicago, "Goiter." Among the other speakers were the Hon. John Lugg, mayor of Monmouth, and Dr. Olin West, Secretary and General Manager of the American Medical Association.

Dr. P. J. H. Farrell was elected Surgeon-General of the Military Order of the World War at the annual meeting held in New York September 26, 1925.

Dr. Mary M. S. Johnstone, tuberculosis division of the Veterans' Bureau, has been temporarily transferred to the Bureau in St. Louis, where she has received significant courtesies from the local profession.

Dr. Beulah Cushman has been elected secretary of the Chicago Council of Medical Women in place of Dr. Florence Johnston, who has returned to Cedar Rapids, Iowa, to succeed to her father's medical practice.

News Notes

—The health department of Springfield has arranged to establish a municipal contagious disease hospital, which will be constructed and operated as a unit of St. John's Hospital.

—It is reported that about fifty cases of an obscure ailment and one death occurred in the vicinity of Collinsville and Maryville, and that the cause of the outbreak was attributed to the use of dairy products from cows that had eaten snakeweed.

—Dr. Evarts A. Graham, professor of surgery, Washington University School of Medicine, St. Louis, addressed the Madison County Medical Society at St. Anthony's Infirmary, Alton, October 2, on "The Treatment of Pulmonary Conditions by Surgical Means."

—H. F. Kovski, Athens, a chiropractor, was found guilty of practicing medicine without a license and fined $100 and cost, October 8. Kovski was recently held to the grand jury on a charge of manslaughter following the death of a child in his office while undergoing "an adjustment," it is reported. No indictment followed.

—The Northwest Branch of the Chicago Medical Society will sponsor a health show at the Logan Square Masonic Temple, 2451 Kedzie Boulevard, December 3-5, which will be endorsed by the Illinois State Medical Society. The physical examinations to be given will include children and adults. Physicians are invited to offer their services as examiners.

—About 10,000 babies were examined physically and mentally at more than seventy baby conferences held at the various fairs this fall under the auspices of the state health department. The predominating defects found were nutritional—rickets, bowlegs, knock-knees, decayed teeth, enlarged heads, flabby muscles and undersize. Each baby was rated on the basis of an examination by specialists.

—It is reported in official correspondence that a so-called University of Trinity College, Chicago, has conferred the degree of Doctor of Medicine on two Japanese gentlemen and that a similar degree was also recently conferred by Lincoln-Jefferson University. Investigations show that although these so-called universities are "legally chartered," they have no buildings and equipment such as all reputable medical schools possess. The University of Trinity College is not listed in the Chicago telephone directory.

—At the request of the board of directors of Highland Hospital, Belvidere, the Boone County Medical Society became the staff of the new hospital. The president of the medical society, Dr. Alden Alguire, becomes the chief of staff of the hospital; the vice president of the medical society, Dr. Robert B. Andrews, becomes assistant chief of staff; the secretary of the society, Dr. Frank S. Whitman, becomes secretary of the staff of the hospital and every member of the society becomes a member of the hospital staff.

—The Chicago Tuberculosis Institute's annual lectures for nurses began October 21; lectures will be given in various sections of the city until December 16; among the lecturers will be Dr. Daniel P. McMillan, director of child study of the board of education; Dr. Ethan Allen Gray, medical director of the Chicago Fresh Air Hospital; Dr. Hiram H. Bay of the Chicago Tuberculosis Institute; Dr. Max Biesenthal; Dr. John M. Dodson of the American Medical Association; Dr. Walter W. Hamburger; Dr. Harrold A. Bachmann and Dr. John Leonard Manning.

—At the twenty-fifth anniversary dinner of the Chicago Surgical Society, October 2, Hotel Sherman, the speakers were charter members of the society. Dr. Edward Wyllys Andrews' subject was "Albert J. Ochsner—Our Colleague and Friend"; Dr. Weller Van Hook spoke on "The Advance in Surgery in Chicago During the Last Twenty-five Years"; Dr. Lewis L. McArthur, "The Surgical Profession in Chicago in the Last Twenty-five Years," and Dr. Arthur Dean Bevan, "The Teaching of Surgery in Chicago in the Last Twenty-five Years." Among former eminent surgeons of Chicago who were charter members were Drs. Senn, Fenger, Murphy, Ochsner and John E. Owens.

—The staff of the Norwegian-American Hospital has arranged a series of graduate clinics for the winter months, covering the various phases of medical sciences, giving members of its staff and physicians in the vicinity opportunity to secure advanced information. On Monday of each week, regional anatomy is considered by Dr. O. F. Kampmeier; on Tuesday, physical diagnosis by Dr. Maurice Lewison; on Wednesday, internal medicine by Dr. S. R. Slaymaker; on Thursday, a series of urologic clinics in which Drs. B. C. Corbus, V. J. O'Conor, R. B. Herbst and H. C.

Rolnik alternate; Friday evenings are to be devoted to case presentations by members of the staff, and Saturday evenings to pathologic conferences and histories under the direction of Dr. W. G. Gibbs. The program is under the direction of Dr. Harry Noskin.

—The council of the Chicago Medical Society, at a meeting, October 13, adopted a resolution concerning free medical service, a copy of which will be forwarded to all hospitals and social agencies and health departments in the city. The council held that the Chicago Medical Society should take the initiative in defining medical charity and approved free medical service to all persons who receive charity of any other kind or description. The council, however, views with alarm the tendency of hospitals, social agencies and health departments to pauperize the public by giving free service to those who can afford to pay even a part of the usual fee, and concluded that members of the Chicago Medical Society who aid such institutions in pauperizing the public may be brought before the ethical relations committee.

—The Chicago Medical Society has maintained a telephone information bureau for its members for four years. The policy of the bureau to requests from the public has been not to give out names or recommend physicians. The result, says the official bulletin of the society, is that the bureau does not meet its requirements to the public. The question of changing the policy toward telephone requests for physicians was taken up by the council at its last meeting, which decided to appoint a committee of five to draw up a proposal for placing the Telephone Information Bureau at the disposal of the public. The proposal will be reported to the council, November 10, and will then be submitted, corrected or approved, to the branch societies at their December meetings. It will then be submitted with the replies from the branches, back to the committee, which will report it to the council for final disposition at the January meeting.

—The annual meeting of the Medical Women's National Association will be held in Dallas, Texas, April 18 and 19, 1926, in pursuance of the usual custom of holding their meeting one day prior to the annual meeting of the American Medical Association, which will convene at Dallas, April 19 to 23.

Deaths

JOSEPH C. CHAPMAN, Wheeler, Ill.; American Medical College, St. Louis, 1879; president of the State Bank of Commerce; aged 70; died, October 9.

WILLIAM LOWRY COPELAND, Chicago; McGill University Faculty of Medicine, Montreal, Que., Canada, 1872; a Fellow A. M. A.; professor of anatomy, Chicago College of Dental Surgery, 1884-1920, and Chicago College of Medicine and Surgery, 1906-1920; formerly professor and head of the department of anatomy at the College of Physicians and Surgeons; on the staff of the Cook County Hospital, 1892; aged 74; died at the West Side Hospital, September 18, of embolism.

GEORGE L. CROCKER, Maroa, Ill.; Rush Medical College, Chicago, 1897; aged 69; died, October 1, of pneumonia.

JOSEPH W. EDWARDS, Mendota, Ill.; Rush Medical cal College, Chicago, 1854; Civil War veteran; aged 93; died, September 8.

PETER F. GATES, Chicago; Harvey Medical College, Chicago, 1903; a Fellow A. M. A.; aged 64; died, August 1, of acute dilation of the heart.

LOUIS L. HERTEL, Chicago; Kentucky School of Medicine, Louisville, 1893; aged 62; died, October 10, of carcinoma of the rectum.

WILLIAM A. HUTCHINS, Orangeville, Ill.; Rush Medical College, Chicago, 1885; aged 65; died, September 22.

JAMES THOMAS JENKINS, Carthage, Ill.; Missouri Medical College, St. Louis, 1890; a Fellow A. M. A.; aged 57; died, October 9, following a long illness.

JAMES MINER, Winchester, Ill.; Jefferson Medical College of Philadelphia, 1861; Civil War veteran; aged 90; died, September 18.

RICHARD FYFE, Chicago; Medical Department University of Illinois, Chicago, 1893; member of the Illinois State Medical Society; formerly on the staff of the Home for Crippled Children; aged 55; died, August 3, of pulmonary tuberculosis.

GEORGE WILLIAM REID, Albion, Ill.; Physio-Medical Institute, Cincinnati, 1884; aged 65; died, September 6.

PATRICK H. SWAIM, Ridge Farm, Ill. (licensed, Illinois, 1882); aged 75; died, September 23, of cerebral hemorrhage.

JOHN F. SNYDER, Rockford, Ill.; Rush Medical College, Chicago, 1882; member of the Illinois State Medical Association; aged 65; died, October 6.

G. E. WHITLOCK, Columbus, Ill.; Jefferson Medical College of Philadelphia, 1876; member of the Illinois State Medical Society; past president of the Adams County Medical Society; aged 74; died, September 19, at the Blessing Hospital, Quincy, of chronic nephritis.

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